CCD-TR315/TR416/TR416PK/TR516/TR516PK/TR716
CCD-TRV16/TRV16PK/TRV36/TRV36PK/TRV43/ TRV46/TRV46PK
RMT-708

SERVICE MANUAL

Self Diagnostics Supported model

Ver 1.0 1999.01



Photo : CCD-TR516



Photo : CCD-TRV46

Handycam
Handycam Vision™
Video 8 XR
video Hi8

B MECHANISM

US Model
Canadian Model
CCD-TR416/TR516/TR716
CCD-TRV16/TRV36/TRV43/TRV46

E Model
CCD-TR315/TR416PK/TR516PK
CCD-TRV16/TRV16PK/TRV36PK/
TRV46/TRV46PK

Hong Kong Model
CCD-TRV16/TRV46

Taiwan Model
CCD-TRV16

Brazilian Model
CCD-TR315/TR416
CCD-TRV16

NTSC

For MECHANISM ADJUSTMENTS, refer to the "8mm Video MECHANICAL ADJUSTMENT MANUAL VII" (9-973-801-11).

SPECIFICATIONS

Video camera recorder
System

Video recording system
2 Rotary heads
Helical scanning FM system

Audio recording system
Rotary heads, FM system

Video signal
NTSC color, EIA standards

Usable cassette
8mm video format cassette
CCD-TR315/TR416/TR416PK
CCD-TRV16/TRV16PK
: standard 8
CCD-TR516/TR516PK/TR716
CCD-TRV36/TRV36PK/TRV43/TRV46/
TRV46PK : Hi8

Recording / Playback time
(using 120 min. cassette)
SP mode: 2 hours
LP mode: 4 hours

Fastforward/rewind time
(using 120 min. cassette)
Approx. 5 min.

Image device
1/4 inch CCD (Charge Coupled Device)
CCD-TR315/TR416/TR416PK/TR516/
TR516PK
CCD-TRV16/TRV16PK/TRV36/
TRV36PK : Approx. 270,000 pixels
(Effective : approx 250,000 pixels)
CCD-TR716
CCD-TRV34/TRV46/TRV46PK :
Approx. 320,000 pixels
(Effective : approx 200,000 pixels)

Viewfinder
Electronic viewfinder
CCD-TR315/TRV series : Monochrome
CCD-TR416/TR416PK/TR516/
TR516PK/TR716 : Color

Lens
Combined power zoom lens
Filter diameter 1 7/16 in. (37 mm)
CCD-TR315/TR416:US,CND
CCD-TRV16/TRV16PK
: 18 x (Optical), 180 x (Digital)
CCD-TR416:BR/TR416PK
: 18 x (Optical), 220 x (Digital)
CCD-TR516/TR516PK/TR716
CCD-TRV36/TRV36PK/TRV43/TRV46/
TRV46PK
: 18 x (Optical), 330 x (Digital)

Focal distance
3/16 - 8 in. (4.1 - 37.8 mm)
When converted to a 35 mm still camera
CCD-TR315/TR416/TR416PK/TR516/
TR516PK
CCD-TRV16/TRV16PK/TRV36/
TRV36PK
: 1 9/16 - 28 in. (39.4 - 709 mm)
CCD-TR715
CCD-TRV43/TRV46/TRV46PK
: 1 7/8 - 33 1/2 in. (47.2 - 850 mm)

Color temperature
Auto

Minimum illumination
0.4 lux at F 1.4
0 lux (in NightShot mode)*

Illumination range
0.4 lux to 100,000 lux

Recommended illumination
More than 100 lux
* Object invisible for the dark can be shot with infrared lighting.

LCD screen (TRV series only)

Picture
2.5 inches measured diagonally
2 x 1 1/2 in.(50.3 x 37.4 mm)

On-screen display
TN LCD/TFT active matrix method

Total dot number
61,380 (279 x 220)

— Continued on next page —

8 VIDEO CAMERA RECORDER
CCD-TR315/TR416/TR416PK
CCD-TRV16/TRV16PK

Hi 8 VIDEO CAMERA RECORDER
CCD-TR516/TR516PK/TR716
CCD-TRV36/TRV36PK/TRV43/TRV46/TRV46PK

MICROFILM

SONY®

Input and output connectors

Video output
Phono jack, 1 Vp-p, 75 ohms, unbalanced

Audio output
Monaural, Phone jack, 327 mV
(at output impedance 47 kilohms)
impedance less than 2.2 kilohms

RFU DC OUT
Special minijack, DC 5V

Earphone jack (TRV series only)
Monaural minijack (ø 3.5 mm)

LANC control jack
Stereo mini-minijack (ø 2.5 mm)

MIC jack
Mini jack, 0.388mV low impedance with 2.5 to 3.0 V DC, output impedance 6.8 kilohms (ø 3.5 mm) : Monaural type

Speaker (TRV series only)
Dynamic speaker

General

Power requirements
7.2 V (battery pack)
8.4 V (AC power adaptor)

Averege power consumption(when using the battery pack)
During camera recording
CCD-TR416/TR416PK/TR516/TR516PK : 2.4 W
CCD-TR315/TR716 : 2.5 W
During camera recording using LCD
CCD-TRV16/TRV16PK/TRV36/TRV36PK : 3.1 W
CCD-TRV43/TRV46/TRV46PK : 3.2 W
Viewfinder
CCD-TRV16/TRV16PK/TRV36/TRV36PK : 2.5 W
CCD-TRV43/TRV46/TRV46PK : 2.6 W

Operating temperature
32°FC to 104°F (C0°C to 40°C)

Storage temperature
-4°FC to 140°F (-20°C to +60°C)

Dimentions (Approx.)
4 1/4 x 4 1/4 x 7 5/8 in.
107 x 107 x 193 mm)(w/h/d)

Mass (Approx.)
CCD-TR315/TR716 : 1 lb 11 oz (790 g)
CCD-TR416/TR416PK/TR516/TR516PK : 1 lb 11 oz (780 g)
CCD-TRV16/TRV16PK/TRV36/TRV36PK : 1 lb 14 oz (870 g)
CCD-TRV43/TRV46/TRV46PK : 1 lb 15 oz (880 g)
excluding the battery pack, lithium battery, cassette and shoulder strap
2 lb 3 oz (1 kg)
including the battery pack NP-F330, lithium battery CR2025, cassette and shoulder strap

Microphone
Monaural type

Supplied accessories
See page 4.

AC power adaptor

Power requirements
100 -240 V AC, 50/60 Hz

Power consumption
23 W

Output voltage
DC OUT: 8.4 V, 1.5 A in operating mode

Operating temperature
32°F to 104°F(0°C to 40°C)

Storage temperature
-4°F to +140°F(-20°C to +60°C)

Dimentions (Approx.)
5 x 1 9/16 x 2 1/2 in. (125 x 39 x 62 mm)(w/h/d) excluding projecting parts

Mass (Approx.)
9.8 oz (280 g) excluding power cord

Design and specifications are subject to change without notice.

- Abbreviation
  Canadian model is abbreviated as CND.
  Brazilian model is abbreviated as BR.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are “pinched” or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit board Repairing
   - Keep the temperature of the soldering iron around 270°C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÉCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÉCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

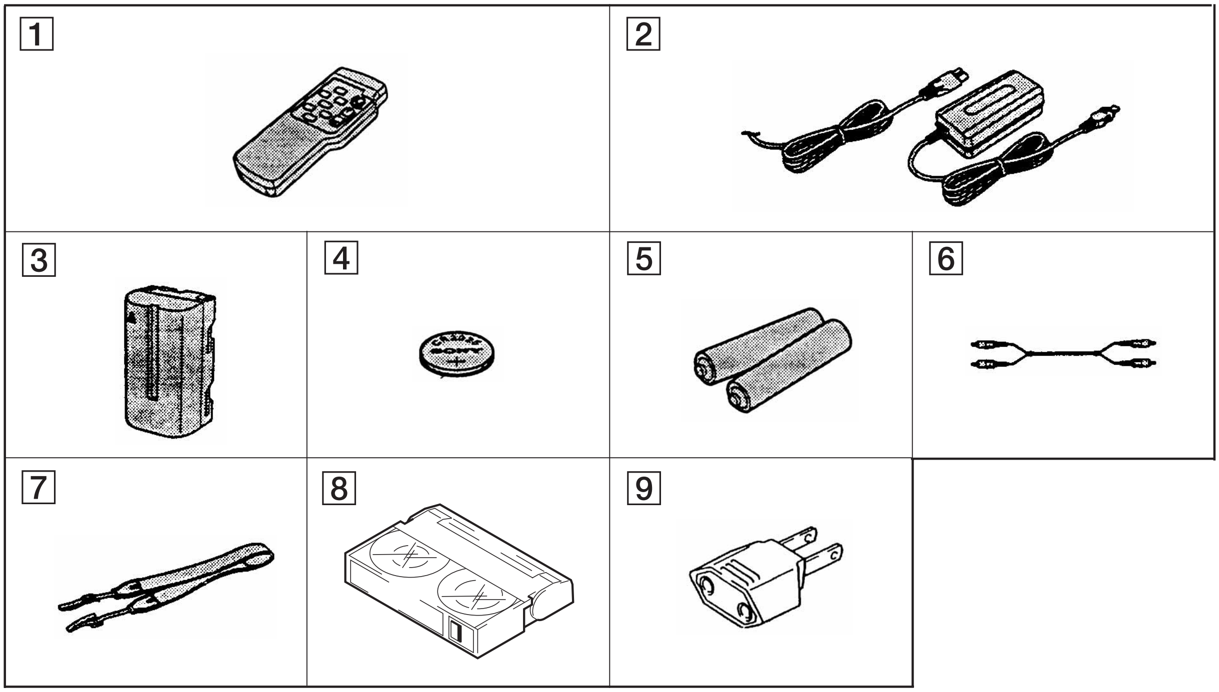
Table for difference of function

Model	CCD-TR315	CCD-TR416		CCD-TR416PK	CCD-TR516	CCD-TR516PK	CCD-TR716	CCD-TRV16	CCD-TRV16PK	CCD-TRV36	CCD-TRV36PK	Remark
Destination	E,BR	US,CND	BR	E	US,CND	E	US,CND	US,CND,E, HK,BR,TW	E	US,CND	E	
Classification	TYPE E	TYPE G			TYPE C		TYPE D	TYPE F		TYPE A		
View finder	B/W	Color	Color	Color	Color	Color	Color	B/W	B/W	B/W	B/W	
Remote commander (RMT-708)	×	×	×	×	O	O	O	×	×	O	O	
Hi8	×	×	×	×	O	O	O	×	×	O	O	
Standard 8	O	O	O	O	×	×	×	O	O	×	×	
Lens (Digital ZOOM)	180X	180X	220X	220X	330X	330X	330X	180X	180X	330X	330X	
Video light	×	×	×	×	O	O	O	×	×	O	O	
CCD	510	510	510	510	510	510	510P	510	510	510	510	
Steadyshot	×	×	×	×	×	×	O	×	×	×	×	O : with SE-80/81board SE451,452,IC451
Laser Link	×	×	×	×	×	×	×	×	×	×	×	O : with VC-215board IC751
LCD panel	×	×	×	×	×	×	×	2.5 inch	2.5 inch	2.5 inch	2.5 inch	2.5 inch : TRV series only

Model	CCD-TRV43	CCD-TRV46	CCD-TRV46PK	Remark
Destination	US,CND	US,CND,E, HK	E	
Classification	TYPE B			
View finder	B/W	B/W	B/W	
Remote commander (RMT-708)	O	O	O	
Hi8	O	O	O	
Standard 8	×	×	×	
Lens (Digital ZOOM)	330x	330x	330x	
Video light	O	O	O	
CCD	510P	510P	510P	
Steadyshot	O	O	O	O : with SE-80/81board SE451,452,IC451
Laser Link	O	O	O	O : with VC-215board IC751
LCD panel	2.5 inch	2.5 inch	2.5 inch	2.5 inch : TRV series only

- Abbreviation
  Canadian model is abbreviated as CND.
  Brazilian model is abbreviated as BR.
  Hong Kong model is abbreviated as HK.
  Taiwan model is abbreviated as TW.

Supplied accessories



1 **RMT-708 Wireless Remote Commander (1)**
CCD-TR516/TR516PK/TR716
CCD-TRV36/TRV36PK/TRV43/TRV46/TRV46PK

2 **AC-L10A/L10B/L10C AC power adaptor**

3 **NP-F330 Battery pack (1)**

4 **CR2025 Lithium Battery (1)**
The lithium battery is already installed in your camcorder.

5 **Size AA (R6) battery for Remote Commander (2)**
CCD-TR516/TR516PK/TR716
CCD-TRV36/TRV36PK/TRV43/TRV46/TRV46PK

6 **A / V connecting cable (1)**

7 **Shoulder strap (1)**

8 **Video P6-15P HB tape**
CCD-TR416: US/TR516: US/TR716:US
CCD-TRV16:US/TRV36:US/TRV43:US/TRV46:US

9 **2 pin conversion adaptor (1)**
CCD- TR315//TR416PK/TR516PK
CCD- TRV16:E,BR,HK,TW/TRV16PK/TRV36PK/
TRV46:E,HK/TRV46PK

- Abbreviation
  Brazilian model is abbreviated as BR.
  Hong Kong model is abbreviated as HK.
  Taiwan model is abbreviated as TW.

SERVICE NOTE

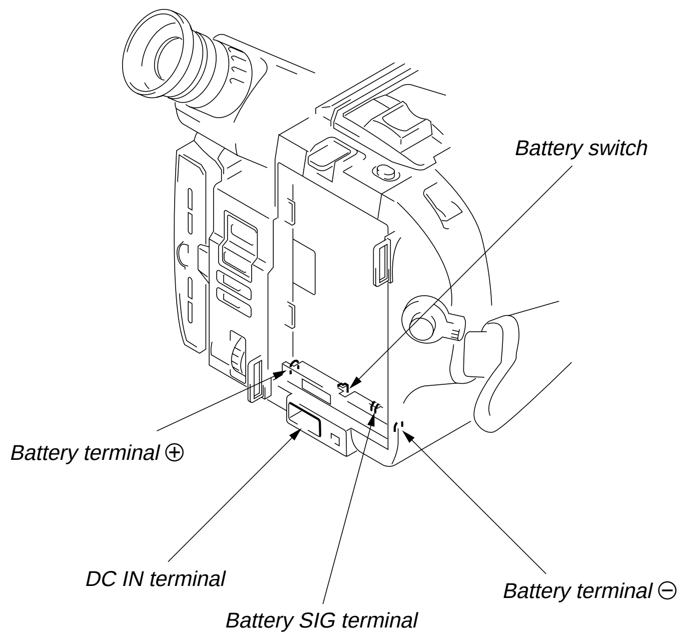
1. POWER SUPPLY DURING REPAIRS

In this unit, about 10 seconds after power is supplied (8.4V) to the battery terminal using the service power cord (J-6082-223-A), the power is shut off so that the unit cannot operate.
This following three methods are available to prevent this. Take note of which to use during repairs.

Method 1.
Connect the servicing remote commander RM-95 (J-6082-053-B) to the LANC jack, and set the remote commander switch to the "ADJ" side.

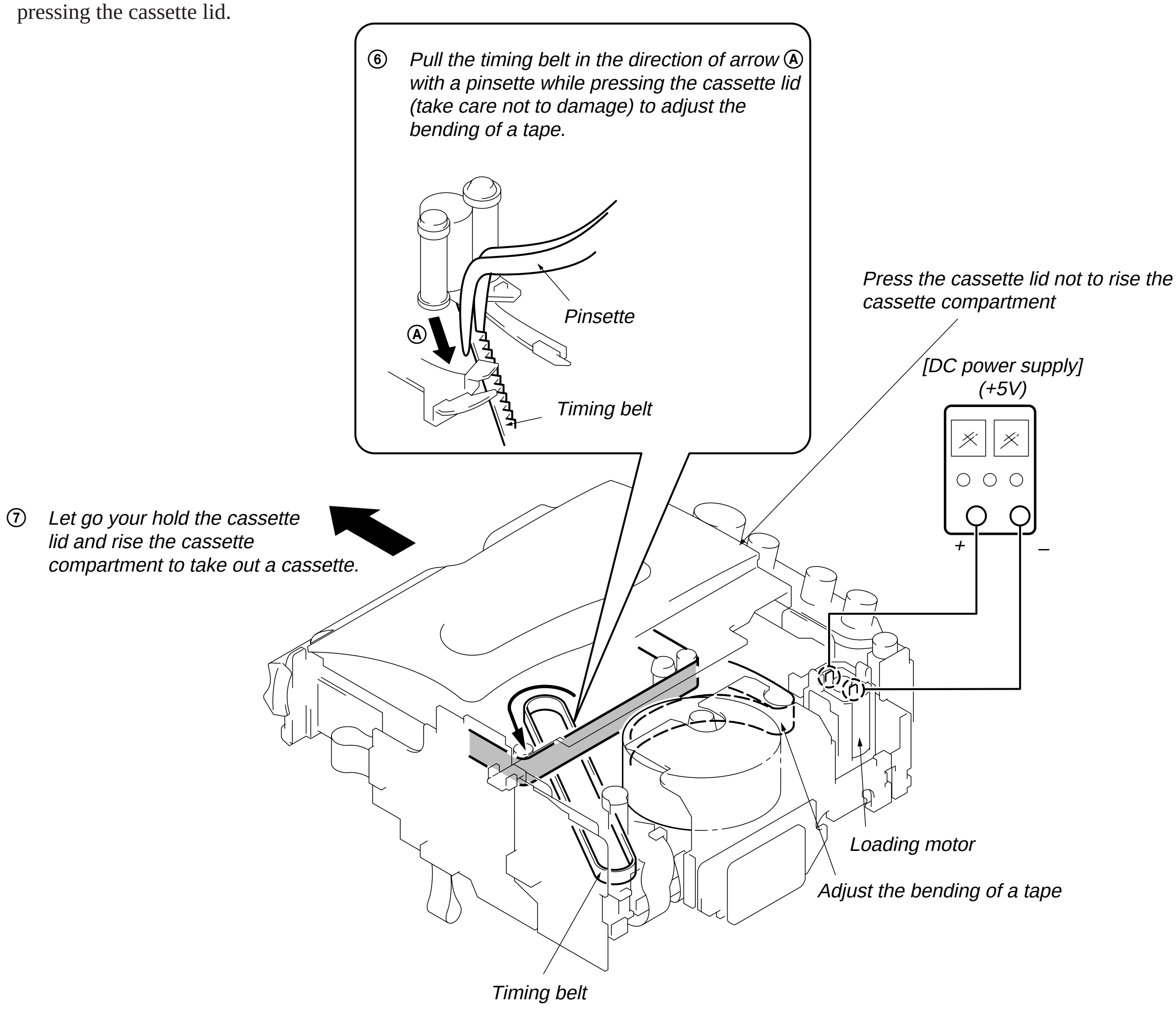
Method 2.
Press the battery switch of the battery terminal using adhesive tape, etc.

Method 3.
Use the DC IN terminal. (Use the AC power adaptor.)



2. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

① Refer to 2-1. to remove the front panel block.
② Refer to 2-4. to remove the cabinet (R) assembly.
③ Refer to 2-6. to remove the battery panel block.
④ Refer to 2-7. to remove the cabinet (L) block.
⑤ Add +5V from the DC POWER SUPPLY and unload with a pressing the cassette lid.



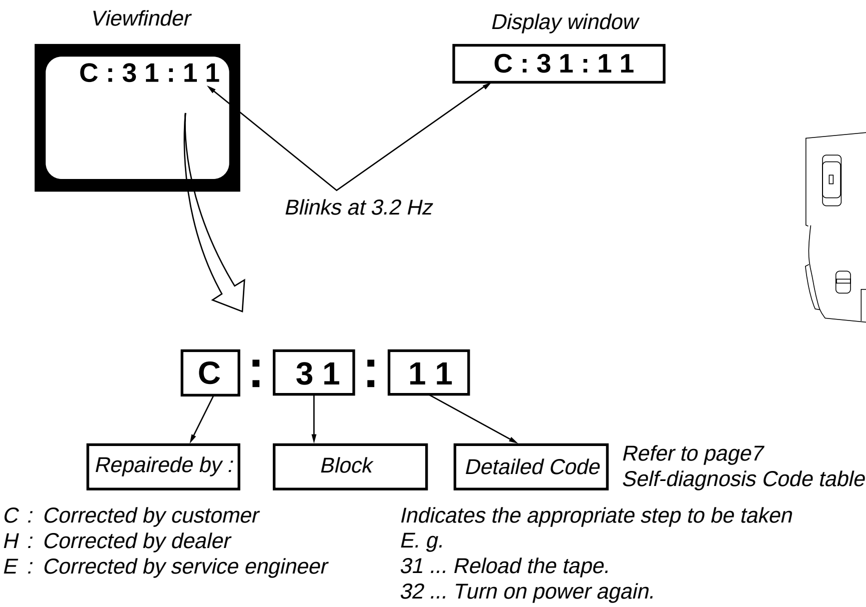
SELF-DIAGNOSIS FUNCTION

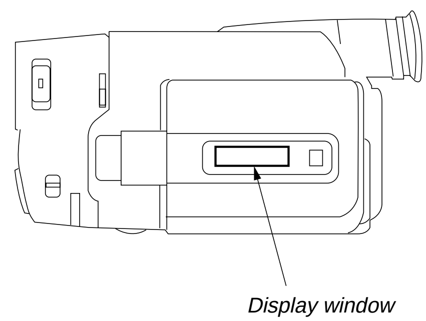
1. Self-diagnosis Function

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder or Display window what to do. This function consists of two display; self-diagnosis display and service mode display.
Details of the self-diagnosis functions are provided in the Instruction manual.

2. Self-diagnosis display

When problems occur while the unit is operating, the counter of the viewfinder or Display window shows a 4-digit display consisting of an alphabet and numbers, which blinks at 3.2 Hz. This 5-character display indicates the “repaired by:”, “block” in which the problem occurred, and “detailed code” of the problem.



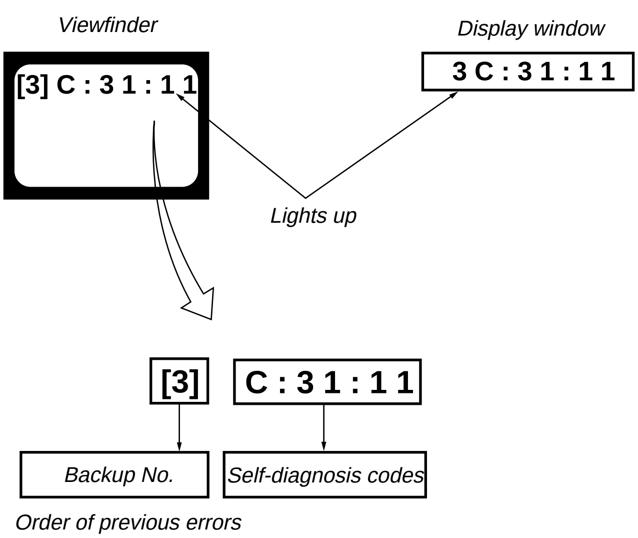


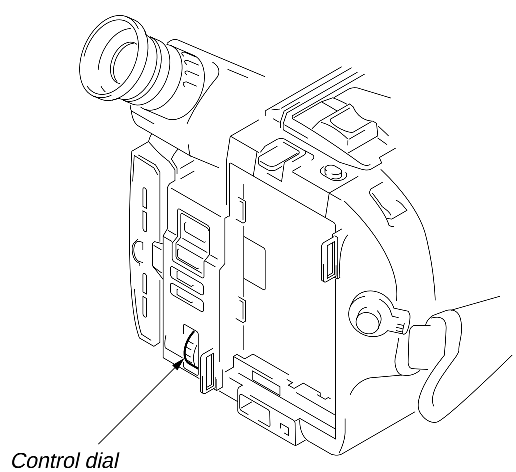
3. Service Mode Display

The service mode display shows up to six self-diagnosis codes shown in the past.

3-1. Display Method

While pressing the “STOP” key, set the switch from OFF to “VTR or PLAYER”, and continue pressing the “STOP” key for 5 seconds continuously. The service mode will be displayed, and the counter will show the backup No. and the 5-character self-diagnosis codes.





3-2. Switching of Backup No.

By rotating the control dial, past self-diagnosis codes will be shown in order. The backup No. in the [] indicates the order in which the problem occurred. (If the number of problems which occurred is less than 6, only the number of problems which occurred will be shown.)

[1] : Occurred first time
[2] : Occurred second time
[3] : Occurred third time
[4] : Occurred fourth time
[5] : Occurred fifth time
[6] : Occurred the last time

3-3. End of Display

Turning OFF the power supply will end the service mode display.

Note: The self-diagnosis display data will be backed up by the coin-type lithium battery. When this coin-type lithium battery is disconnected, the self-diagnosis data will be lost by initialization.

4. Self-diagnosis Code Table

Self-diagnosis Code					Symptom/State	Correction
Repaired by:	Block Function		Detailed Code			
C	2	1	0	0	Condensation.	Remove the cassette, and insert it again after one hour.
C	2	2	0	0	Video head is dirty.	Clean with the optional cleaning cassette.
C	2	3	0	0	Non-standard battery is used.	Use the InfoLITHIUM battery.
C	3	1	1	0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	1	1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	2	0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2	1	S reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2	2	T reel fault	Load the tape again, and perform operations from the beginning.
C	3	1	2	3	S reel fault	Load the tape again, and perform operations from the beginning.
C	3	1	3	0	FG fault when starting capstan	Load the tape again, and perform operations from the beginning.
C	3	1	3	1	FG fault during normal capstan operations	Load the tape again, and perform operations from the beginning.
C	3	1	4	0	FG fault when starting drum	Load the tape again, and perform operations from the beginning.
C	3	1	4	1	PG fault when starting drum	Load the tape again, and perform operations from the beginning.
C	3	1	4	2	FG fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	3	1	4	3	PG fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	3	1	4	4	Phase fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	3	2	1	0	LOAD direction loading motor time-out	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	1	1	UNLOAD direction loading motor time-out	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	1	S reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	2	T reel fault	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	3	S reel fault	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	0	FG fault when starting capstan	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	1	FG fault during normal capstan operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	0	FG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	1	PG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	2	FG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	3	PG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	4	Phase fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
E	6	1	0	0	Difficult to adjust focus (Cannot initialize focus.)	Inspect the lens block focus reset sensor (Pin ⑲ of CN551 of VC-215 board) when focusing is performed when the focus dial is rotated in the focus manual mode and the focus motor drive circuit (IC552 of VC-215 board) when the focusing is not performed. Note : Use the remote commander RM-95 only for the model without the focus dial.
E	6	1	1	0	Zoom operations fault (Cannot initialize zoom lens.)	Inspect the lens block zoom reset sensor (Pin ㉑ of CN551 of VC-215 board) when zooming is performed when the zoom lens is operated and the zoom motor drive circuit (IC552 of VC215 board) when zooming is not performed.
E	6	2	0	0	Handshake correction function does not work well.(With pitch angular velocity sensor output stopped)	Inspect yaw angular velocity sensor (SE451 of SE-80/81 board) peripheral circuits.
E	6	2	0	1	Handshake correction function does not work well.(With yaw angular velocity sensor output stopped)	Inspect pitch angular velocity sensor (SE452 of SE-80/81 board) peripheral circuits.

TABLE OF CONTENTS

SERVICE NOTE

Self-Diagnosis Function

1. GENERAL

This section is extacked from instruction manual of CCD-TRV36/TRV43/TRV46.

2. DISASSEMBLY

3. BLOCK DIAGRAMS

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

5. ADJUSTMENTS

6. REPAIR PARTS LIST

SECTION 1
GENERAL

This section is extracted from instruction manual of CCD-TRV36/TRV43/TRV46.

Before you begin

Using this manual

The instructions in this manual are for the three models listed below. Before you start reading this manual and operating the unit, check your model number by looking at the bottom of your camcorder. The CCD-TRV46 is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "CCD-TRV46 only."
As you read through this manual, buttons and settings on the camcorder are shown in capital letters.
e.g. Set the POWER switch to CAMERA.
You can hear the beep sound to confirm your operation.

Types of differences

CCD-	TRV36	TRV43	TRV46
Steadyshot	—	●	●
LASER LINK	—	●	●

Note on TV color systems

TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system-based TV.

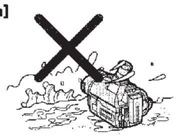
Precaution on copyright

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

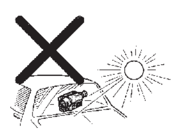
Precautions on camcorder care

- **The LCD screen is manufactured using high-precision technology. However, there may be some tiny black points and/or bright points (red, blue or green in color) that constantly appear on the LCD screen. These points are normal in the manufacturing process and do not affect the recorded picture in any way. Over 99.99% are operational for effective use.**
- Do not let the camcorder get wet. Keep the camcorder away from rain and sea water. Letting the camcorder get wet may cause the unit to malfunction, and sometimes this malfunction cannot be repaired **[a]**.
- Never leave the camcorder exposed to temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight **[b]**.

[a]

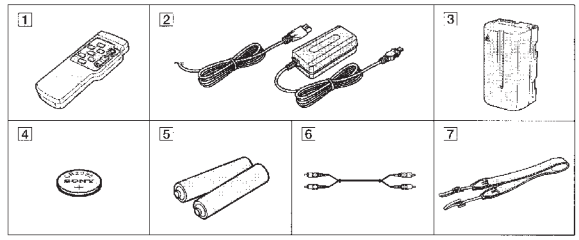


[b]



Checking supplied accessories

Check that the following accessories are supplied with your camcorder.



1 **Wireless Remote Commander** (1) (p. 79)
2 **AC-L10A/L10B/L10C AC power adaptor** (1), **Power cord** (1) (p. 7, 24)
3 **NP-F330 Battery pack** (1) (p. 6, 24)
4 **CR2025 Lithium Battery** (1) (p. 55)
The lithium battery is already installed in your camcorder.
5 **Size AA (R6) battery for Remote Commander** (2) (p. 79)
6 **A/V connecting cable** (1) (p. 52)
7 **Shoulder strap** (1) (p. 80)

Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

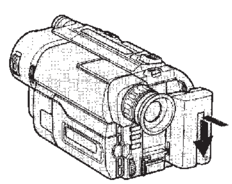
Getting started

Installing and charging the battery pack

Before using your camcorder, you first need to install and charge the battery pack.
This camcorder operates only with the "InfoLITHIUM" battery pack (L series).
"InfoLITHIUM" is a trademark of Sony Corporation.

Installing the battery pack

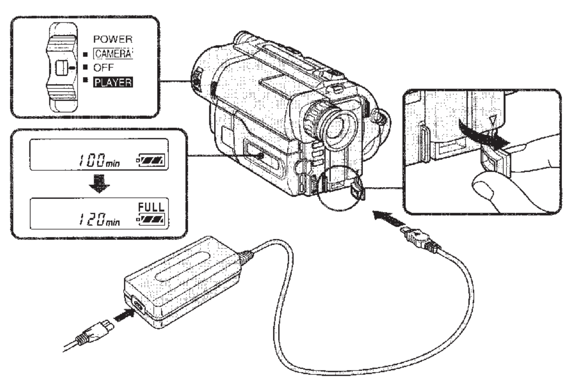
Install the battery pack in the direction of the ▼ mark on the battery pack. Slide the battery pack down until it catches on the battery release lever and clicks.
Attach the battery pack to the camcorder securely.



Note on the battery pack
Do not carry the camcorder by grasping the battery pack.

Charging the battery pack

Charge the battery pack on a flat surface without vibration. The battery pack is charged a little in the factory.
(1) Open the DC IN jack cover and connect the supplied AC power adaptor to the DC IN jack with the plug's ▲ mark up.
(2) Connect the power cord to the AC power adaptor.
(3) Connect the power cord to a wall outlet.
(4) Slide the POWER switch to OFF. Remaining battery time is indicated by the minutes on the display window. Charging begins.
When the remaining battery indicator becomes ▬, **normal charge** is completed. For **full charge**, which allows you to use the battery longer than usual, leave the battery pack attached for about 1 hour after normal charge is completed until **FULL** appears in the display window.
Before using the camcorder with the battery pack, unplug the AC power adaptor from the DC IN jack of the camcorder. You can also use the battery pack before it is completely charged.



Notes
- "– – min" appears in the display window until the camcorder calculates remaining battery time.
- Remaining battery time indication in the display window roughly indicates the recording time with the viewfinder. Use it as a guide. It may differ from the actual recording time.

Charging time

Battery pack (NP-)	F330 (supplied)	F530/F550	F730/F730H/ F750	F930/F950
Charging time* (min.)	150 (90)	210 (150)	300 (240)	390 (330)

The time required for a normal charge is indicated in parentheses.
* Approximate minutes to charge an empty battery pack using the supplied AC power adaptor. (Lower temperatures require a longer charging time.)

Battery life

Upper numbers are the time when recording with the viewfinder. Lower numbers are the time when recording with the LCD screen. Using both will further reduce recording time.

CCD-TRV36

Battery pack (NP-)	F330 (supplied)	F530	F550	F730	F730H /F750	F930	F950
Continuous recording time*	130 (115) 100 (90)	225 (200) 170 (155)	260 (230) 205 (185)	450 (405) 350 (310)	530 (480) 425 (380)	710 (640) 555 (500)	815 (730) 650 (590)
Typical recording time**	65 (60) 55 (45)	115 (105) 90 (85)	135 (120) 110 (100)	235 (210) 190 (170)	280 (250) 230 (205)	375 (335) 305 (275)	430 (385) 355 (320)
Playing time on LCD	100 (90)	165 (150)	200 (180)	335 (300)	410 (365)	535 (480)	630 (570)

CCD-TRV43/TRV46

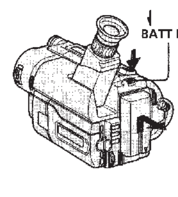
Battery pack (NP-)	F330 (supplied)	F530	F550	F730	F730H /F750	F930	F950
Continuous recording time*	125 (110) 100 (90)	215 (190) 165 (150)	250 (220) 200 (180)	430 (385) 335 (300)	510 (460) 410 (365)	680 (610) 535 (480)	780 (700) 630 (570)
Typical recording time**	65 (55) 55 (45)	110 (100) 90 (80)	130 (115) 110 (95)	225 (200) 180 (165)	270 (240) 225 (200)	360 (320) 290 (260)	410 (370) 345 (310)
Playing time on LCD	100 (90)	165 (150)	200 (180)	335 (300)	410 (365)	535 (480)	630 (570)

Numbers in parentheses indicate the time when you use a normally charged battery. Battery life will be shorter if you use the camcorder in a cold environment.
* Approximate continuous recording time at 77°F (25°C).
** Approximate minutes when recording while you repeat recording start/stop, zooming and turning the power on/off. The actual battery life may be shorter.

Notes on remaining battery time indication during recording
- Remaining battery time is displayed in the viewfinder or on the LCD screen. However, the indication may not be displayed properly, depending on using conditions and circumstances.
- When you close the LCD panel and open it again, it takes about 1 minute for the correct remaining time to be displayed.

To remove the battery pack

While pressing BATT RELEASE, slide the battery pack in the direction of the arrow.

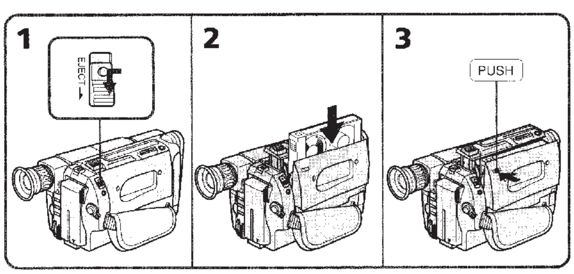


You can look at the demonstration of the functions available with this camcorder (p. 29).

Inserting a cassette

Make sure that the power source is installed. When you want to record in the Hi8 system, use Hi8 video cassette **Hi8**.

(1) While pressing the small blue button on the EJECT switch, slide it in the direction of the arrow. The cassette compartment automatically lifts up and opens.
(2) Insert a cassette with the window facing out.
(3) Close the cassette compartment by pressing the "PUSH" mark on the cassette compartment. The cassette compartment automatically goes down.

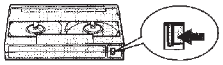


To eject the cassette

While pressing the small blue button on the EJECT switch, slide it in the direction of the arrow.

To prevent accidental erasure

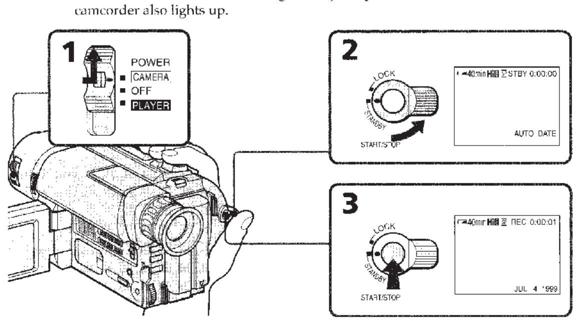
Slide the tab on the cassette to expose the red mark. If you insert the cassette with the red mark exposed and close the cassette compartment, the beeps sound for a while. If you try to record with the red mark exposed, the [tape icon] and ≜ indicators flash, and you cannot record.
To re-record on this tape, slide the tab back out covering the red mark.



Camera recording

Make sure that the power source is installed and a cassette is inserted and that the START/STOP MODE switch inside the LCD panel is set to [icon]. Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working correctly.
When you use the camcorder for the first time, power on it and reset the date and time to your time before you start recording (p. 57). The date is automatically recorded for 10 seconds after you start recording **(AUTO DATE feature)**. This feature works only once a day.

(1) While pressing the small green button on the POWER switch, set it to CAMERA.
(2) Turn STANDBY up to STANDBY.
(3) Press START/STOP. The camcorder starts recording. The "REC" indicator appears. The red lamp lights up in the viewfinder when you record with the viewfinder. The camera recording/battery lamp located on the front of the camcorder also lights up.



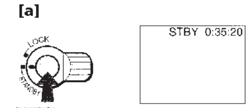
To stop recording momentarily [a]

Press START/STOP again. The "STBY" indicator appears in the viewfinder **(Standby mode)**.

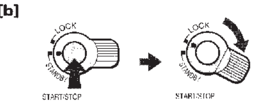
To finish recording [b]

Press START/STOP again. Turn STANDBY down to LOCK and set the POWER switch to OFF. Then, eject the cassette.

[a]



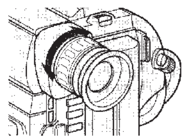
[b]



Note
Be sure to remove the battery pack from the comcorder after using.

To focus the viewfinder lens

If you cannot see the indicators in the viewfinder clearly, focus the viewfinder lens. Turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus.



Note on Standby mode
If you leave the camcorder in Standby mode for 5 minutes while the cassette is inserted, the camcorder turns off automatically for saving battery power as well as for preventing the battery and tape from wearing down. To resume Standby mode, turn STANDBY down and up again. To start recording, press START/STOP.

Note on recording
When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. Passing the tape lead will ensure that you will not miss any start-up scenes when you play back the tape.

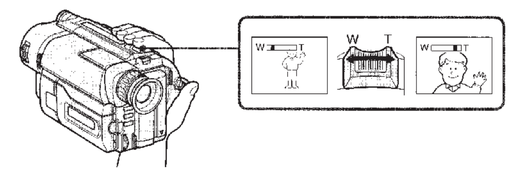
Notes on the tape counter
- The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.
- If the tape is recorded in SP and LP modes mixed, the tape counter shows incorrect recording time. When you intend to edit the tape using the tape counter as a guide, record in same (SP or LP) mode.

Note on the beep sound
The beep sounds when you operate the camcorder. Several beeps also sound as a warning of any unusual condition of the camcorder.
Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, select "OFF" in the menu system.

Note on the AUTO DATE feature
The clock is set to East Coast Standard Time at the factory. You can reset the clock in the menu system. You can change the AUTO DATE settings by selecting ON or OFF in the menu system. The AUTO DATE feature shows the date automatically once a day. However, the date may automatically appear more than once a day when:
- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.
- you set AUTO DATE to OFF once and set it to ON again in the menu system.

Using the zoom feature

Zooming is a recording technique that lets you change the size of the subject in the scene.
For more professional-looking recordings, use the zoom function sparingly.
"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears further away)



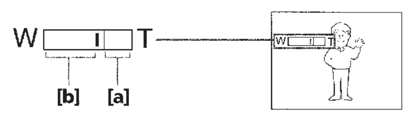
Zooming speed (Variable speed zooming)

Move the power zoom lever a little for a slower zoom, move it further for a faster zoom.

When you shoot a subject using a telephoto zoom
If you cannot get a sharp focus while in extreme telephoto zoom, move the power zoom lever to the "W" side until the focus is sharp. You can shoot a subject that is at least about 2 5/8 feet (about 80 cm) away from the lens surface in the telephoto position, or about 1/2 inch (about 1 cm) away in the wide-angle position.

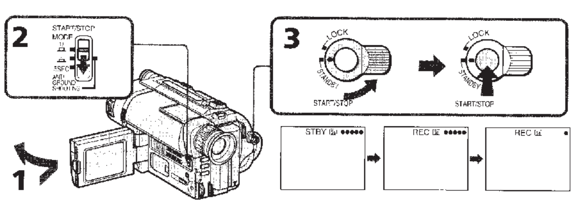
Zooming more than 18x – digital zoom
When you set D ZOOM to ON in the menu system, more than 18x zoom is performed digitally, but the picture quality deteriorates as you move the lever toward the "T" side.

Notes on digital zoom
- The right side [a] of the power zoom indicator shows the digital zooming zone, and the left side [b] shows the optical zooming zone. When you set D ZOOM to ON in the menu system, the [a] zone appears.
- Digital zoom function is set to OFF at the factory.



Selecting the START/STOP mode

Your camcorder has three modes. These modes enable you to take a series of quick shots resulting in a lively video.
(1) While pressing OPEN, open the LCD panel.
(2) Set START/STOP MODE to the desired mode.
⏏ : Recording starts when you press START/STOP, and stops when you press it again (factory setting).
ANTI GROUND SHOOTING ⏏ : The camcorder records only while you press down START/STOP so that you can avoid recording unnecessary scenes.
5SEC: When you press START/STOP, the camcorder records for 5 seconds and then stops automatically.
(3) Turn STANDBY up to STANDBY and press START/STOP.
Recording starts.
If you selected 5SEC, the tape counter disappears and five dots appear. The dots disappear at a rate of one per second as illustrated below.



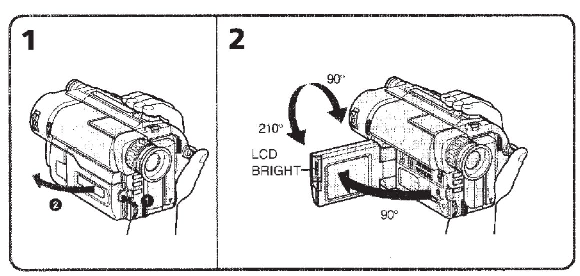
To extend the recording time in 5SEC mode

Press START/STOP again before all the dots disappear. Recording continues for about 5 seconds from the moment you press START/STOP.

Notes on START/STOP mode
- If you have turned off the indicators on the LCD screen, the dots do not appear.
- You cannot use the fader function in the 5SEC or ANTI GROUND SHOOTING ⏏ mode.

Shooting with the LCD screen

You can also record the picture while looking at the LCD screen.
When using the LCD screen, the viewfinder turns off automatically. You cannot monitor the sound from the speaker during recording.
(1) While pressing OPEN, open the LCD panel.
(2) Adjust the angle of the LCD panel.
The LCD panel moves about 90 degrees to this side and about 210 degrees to the other side.
To adjust the brightness of the LCD screen, press LCD BRIGHT.
+ side: to brighten the LCD screen
– side: to dim the LCD screen
The battery life is longer when the LCD panel is closed. Use the viewfinder instead of the LCD screen to save the battery power.

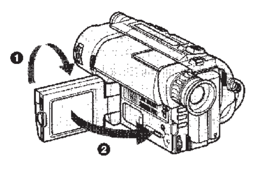


Backlighting the LCD screen

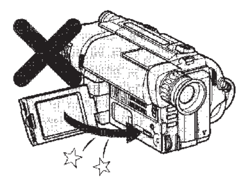
If the LCD screen is insufficiently illuminated even after adjusting LCD BRIGHT, select LCD B. L. in the menu system and set to BRIGHT. You can select LCD B. L. only while using the battery pack as a power source.

Notes on the LCD panel
- When closing the LCD panel, turn it vertically until it clicks **[a]**.
- When turning the LCD panel, turn it always vertically; otherwise, the camcorder body may be damaged or the LCD panel may not close properly **[b]**.
- Close the LCD panel completely when not in use.

[a]



[b]



Letting the subject monitor the shot (Mirror mode)

You can turn the LCD panel over so that it faces the other way and you can let the subject monitor the shot while shooting with the viewfinder.

Turn the LCD panel vertically first until it clicks, then turn it over. The ☺ indicator appears on the LCD screen **(Mirror mode)** and the date and remaining tape indicators disappear.

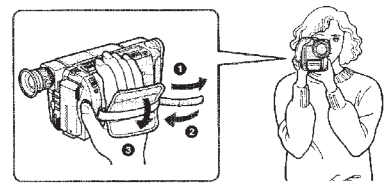
To cancel mirror mode

Turn the LCD panel back toward the viewfinder.

Notes on mirror mode
- The picture on the LCD looks as a mirror-image while recording in mirror mode. The STBY indicator appears as ▮▮● and REC as ●. The other indicators may not appear in mirror mode.
- While recording in mirror mode, you cannot operate the following buttons: TITLE, DATE, TIME and MENU.
- The date appears in reverse when the AUTO DATE feature is turned on. When recorded, it will be normal.

Hints for better shooting

For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:
- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb.



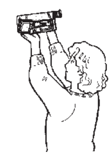
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it. Be sure to not touch the built-in microphone.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting angle. Lift the viewfinder up for recording from a low position **[a]**.
- You can also record in a low position or even in a high position using the LCD panel **[b]**.
- When you use the LCD screen outdoors in direct sunlight, the LCD screen may be difficult to see. If this happens, we recommend that you use the viewfinder.

[a]



[b]

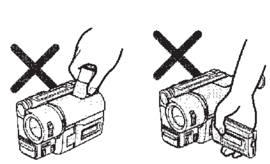




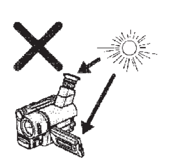
Place the camcorder on a flat surface or use a tripod
Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder.
When attaching a non-Sony tripod, make sure that the length of the tripod screw is less than 9/32 inch (6.5 mm). Otherwise, you cannot attach the tripod securely and the screw may damage the camcorder.

Cautions on the viewfinder and the LCD
- Do not pick up the camcorder by the viewfinder or by the LCD panel **[c]**.
- Do not place the camcorder so as to point the viewfinder or the LCD screen toward the sun. The inside of the viewfinder or the LCD screen may be damaged. Be careful when placing the camcorder under sunlight or by a window **[d]**.

[c]

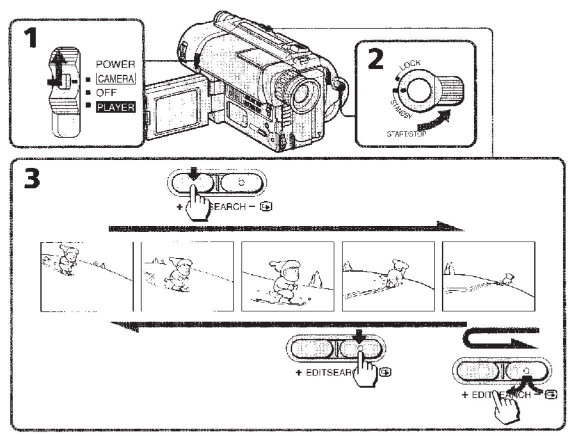


[d]



Checking the recorded picture

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder or on the LCD screen.
(1) While pressing the small green button on the POWER switch, set it to CAMERA.
(2) Turn STANDBY up to STANDBY.
(3) Press the – (⊛) side of EDITSEARCH momentarily; the last few seconds of the recorded portion play back **(Rec Review)**.
You can monitor the sound from the speaker or an earphone.
Hold down the – side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side **(Edit Search)**.



To stop playback

Release EDITSEARCH.

To go back to the last recorded point after edit search

Press END SEARCH. The last recorded point is played back for about 5 seconds (10 seconds in LP mode) and stops. Note that this function does not work once you eject the cassette after you recorded on the tape.

To begin re-recording

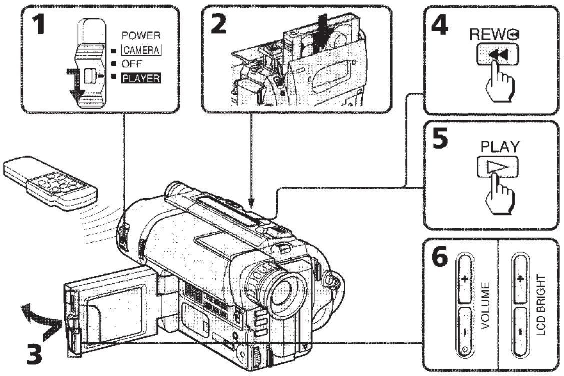
Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the cassette, the transition between the last scene you recorded and the next scene you record will be smooth.

Playing back a tape

You can monitor the playback picture on the LCD screen.

(1) While pressing the small green button on the POWER switch, set it to PLAYER.
(2) Insert the recorded tape with the window facing out.
(3) While pressing OPEN, open the LCD panel. Adjust the angle of the LCD panel or the brightness of the LCD screen if necessary.
(4) Press ◀◀ to rewind the tape.
(5) Press ▶ to start playback.
(6) Adjust the volume using VOLUME and adjust the brightness of the LCD screen using LCD BRIGHT.

You can also monitor the picture on a TV screen, after connecting the camcorder to a TV or VCR.

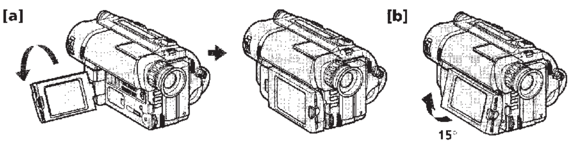


To stop playback, press ■.
To rewind the tape, press ◀◀.
To fast-forward the tape rapidly, press ▶▶.

When monitoring on the LCD screen

You can turn the LCD panel over and move back to the camcorder with the LCD screen facing out **[a]**. You can adjust the angle of the LCD screen by turning the LCD screen up to 15 degrees **[b]**.

[a] [b]



Using the remote commander

You can control playback using the supplied Remote Commander. Before using the Remote Commander, insert the size AA (R6) batteries.

Note on DISPLAY button
Press DISPLAY to display the screen indicators on the LCD screen. To erase the indicators, press DISPLAY again. If the POWER switch is set to CAMERA, you can erase the indicator by pressing DISPLAY.

Using an earphone
Connect an earphone (not supplied) to the ◎ jack. You can adjust the volume using VOLUME. When you use an earphone, the sound does not come from the speaker.

To view the playback picture in the viewfinder
Close the LCD panel. The viewfinder turns on automatically. When using the viewfinder, you can monitor sound only by using an earphone.
To view on the LCD screen again, open the LCD panel. The viewfinder turns off automatically.

Note on the lens cover
The lens cover does not open when the POWER switch is set to PLAYER. Do not open the lens cover manually. It may cause malfunction.

Various playback modes

You can enjoy clear pictures on the LCD screen during still, slow and picture search. **(Crystal-clear still/slow/picture search)**

To view a still picture (playback pause)

Press ❚❚ during playback. To resume playback, press ❚❚ or ▶.

To locate a scene (picture search)

Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing the tape or rewinding (skip scan)

Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▶.

To view the picture at 1/5 speed (slow playback)

Press ❚▶ on the Remote Commander during playback. To resume normal playback, press ▶. If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

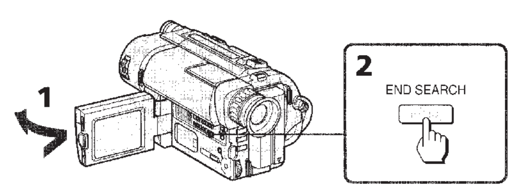
Notes on playback
- Noise may appear when you use the crystal-clear still/slow/picture search function to play back the tape recorded in LP mode.
- Streaks appear and the sound is muted in the various playback modes.
- When playback pause mode lasts for 5 minutes, the camcorder automatically enters stop mode.
- Horizontal noise appears at the center or top and bottom of the screen when you play back a tape in reverse. This is normal.

Searching for the end of the picture

You can go to the end of the recorded portion after you record and play back the tape to make the transition between the last scene you recorded and the next scene smooth. The tape starts rewinding or fast-forwarding and the last 5 seconds (10 seconds in LP mode) of the recorded portion play back. Then the tape stops at the end of the recorded picture **(End Search)**.
Note that the End Search function does not work once you eject the cassette after you have recorded on the tape.

(1) While pressing OPEN, open the LCD panel.
(2) Press END SEARCH.

This function works when the POWER switch is set to either CAMERA or PLAYER.



If you start recording after using END SEARCH
Occasionally, the transition between the last scene you recorded and the next scene may not be smooth.

Advanced operations

Using alternative power sources

You can choose any of the following power sources for your camcorder: battery pack, house current, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

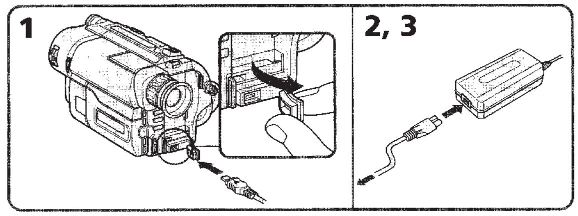
Place	Power source	Accessory to be used
Indoors	House current	Supplied AC power adaptor
Outdoors	Battery pack	Battery pack NP-F330 (supplied), NP-F530, NP-F550, NP-F730, NP-F730H, NP-F750, NP-F930, NP-F950
In the car	12 V or 24 V car battery	Sony DC adaptor/charger DC-V700 (not supplied)

Notes on power sources

- Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape.
- The DC IN jack has power source priority. This means that the battery pack cannot supply any power if the power cord is connected to the DC IN jack, even when the power cord is not plugged into a wall outlet.

Using the house current

(1) Open the DC IN jack cover, and connect the AC power adaptor to the DC IN jack on the camcorder.
(2) Connect the power cord to the AC power adaptor.
(3) Connect the power cord to a wall outlet.



WARNING
The power cord must only be changed at a qualified service shop.

PRECAUTION
The set is not disconnected from the AC power source (house current) as long as it is connected to the wall outlet, even if the set itself has been turned off.

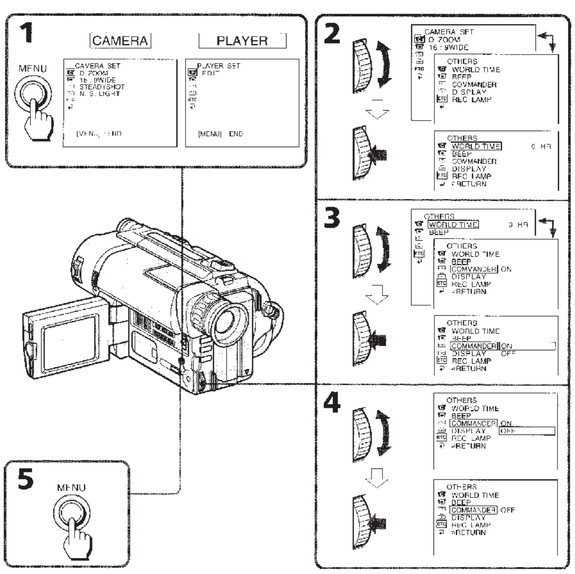
Note
Keep the AC power adaptor away from the camcorder if the picture is disturbed.

This mark indicates that this product is a genuine accessory for Sony video products.
When purchasing Sony video products, Sony recommends that you purchase accessories with this "GENUINE VIDEO ACCESSORIES" mark.

Changing the mode settings

You can change the mode settings in the menu system to further enjoy the features and functions of the camcorder.

(1) Press MENU to display the menu.
(2) Turn the control dial to select the desired icon in the left side of the menu, then press the dial to set.
(3) Turn the control dial to select the desired item, then press the dial to set.
(4) Turn the control dial to select the desired mode, and press the dial to set. If you want to change the other modes, repeat steps 3 and 4. If you want to change the other items, select ⮐ RETURN and press the dial, then repeat steps from 2 to 4.
(5) Press MENU or select ⮐ icon to erase the menu display.



Note on the menu display
Depending on the model of your camcorder, the menu display may be different from that in this illustration.

Notes on changing the mode setting

- Menu items differ depending on the setting of the POWER switch to PLAYER or CAMERA.
- When you let the subject monitor the shot (mirror mode), the menu display does not appear.

Selecting the mode setting of each item

Items for both CAMERA and PLAYER modes

LCD B. L.* <BRT NORMAL/BRIGHT>

- Normally select BRT NORMAL.
- Select BRIGHT when the LCD screen is dark.

When you select BRIGHT, battery life is about 10 percent shorter during recording. When you use the power sources other than the battery pack, BRIGHT is automatically selected, and LCD B.L. is not displayed in the menu.

LCD COLOR*
Select this item to adjust the color on the LCD screen.

REMAIN* <AUTO/ON>

- Select AUTO when you want to display the remaining tape bar:
  - for about 8 seconds after the camcorder is turned on and calculates the remainder of the tape.
  - for about 8 seconds after a cassette is inserted and the camcorder calculates the remainder of the tape.
  - for about 8 seconds after ▶ is pressed in PLAYER mode.
  - for about 8 seconds after DISPLAY is pressed to display the screen indicators.
  - for the period of tape rewinding, forwarding or picture search in PLAYER mode.
- Select ON to always display the remaining tape indicator.

AUTO TV ON* <ON/OFF> (CCD-TRV43/TRV46 only)
You can use this feature only with Sony TVs.

- Select ON to turn on the TV automatically when using the LASER LINK function.
- Select OFF not to turn on the TV.

TV INPUT* <VIDEO1/VIDEO2/VIDEO3/OFF> (CCD-TRV43/TRV46 only)
Select 1 or 2 or 3 of the video input on the TV which the IR receiver (not supplied) is connected to when using the LASER LINK function.

LTR SIZE* <NORMAL/2x>

- Normally select NORMAL.
- Select 2x to display selected menu item by twice size of normal.

BEEP* <ON/OFF>

- Select ON so that beeps sound when you start/stop recording, etc.
- Select OFF when you do not want to hear the beep sound.

ETC **COMMANDER <ON/OFF>**
- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander.

ETC **DISPLAY* <LCD or V-OUT/LCD>**
- Normally select LCD. The display appears on the LCD screen.
- Select V-OUT/LCD to show the display both on the TV screen and LCD screen.

Items for CAMERA mode only

D ZOOM* <ON/OFF>
- Select ON to activate digital zooming.
- Select OFF to prevent the deterioration of the picture quality. The camcorder goes back to optical zoom.

16:9WIDE* <OFF/CINEMA/16:9FULL>
- Normally select OFF.
- Select CINEMA to record in CINEMA mode.
- Select 16:9FULL to record in 16:9FULL mode.

STEADYSHOT* <ON/OFF> (CCD-TRV43/TRV46 only)
- Normally select ON.
- Select OFF to release the Steadyshot function.

N.S.LIGHT* <ON/OFF>
- Normally select ON.
- Select OFF to not use the NightShot Light function.

REC MODE* <SP/LP>
- Select SP when recording in SP (standard play) mode.
- Select LP when recording in LP (long play) mode.

When a tape recorded on this camcorder in LP mode is played back on other types of 8mm camcorders or VCRs, the playback quality may not be as good as that on this camcorder.

Note on the REC mode
When you record tapes in LP mode, the picture is not recorded in the Hi8 system, but in the standard 8 system.

ORC TO SET*
Select this item to automatically adjust the recording condition to get the best possible recording.
If you have already performed this function, "ORC ON" is displayed.
ORC stands for "Optimizing the Recording Condition."

CLOCK SET*
Reset the date or time.

AUTO DATE* <ON/OFF>
- Select ON to record the date for 10 seconds after recording has started.
- Select OFF to not record the date.

DEMO MODE* <ON/OFF>
- Select ON to make the demonstration appear.
- Select OFF to deactivate the demonstration mode.

Notes on DEMO MODE
- DEMO MODE is set to STBY (Standby) at the factory and the demonstration starts about 10 minutes after you set the POWER switch to CAMERA without inserting a cassette.
  Note that you cannot select STBY of DEMO MODE in the menu system.
- You cannot select DEMO MODE when a cassette is inserted in the camcorder.
- If you insert a cassette during the demonstration, the demonstration stops. You can start recording as usual. DEMO MODE automatically returns to STBY.
- When NIGHTSHOT is set to ON, "NIGHTSHOT" appears in the viewfinder or on the LCD screen and you cannot select DEMO MODE.

To look at the demonstration at once
Eject the cassette, if inserted. Select ON of DEMO MODE and erase the menu display. The demonstration will begin.
When you turn off the camcorder once, DEMO MODE automatically returns to STBY.

ETC **WORLD TIME***
Select this item to set the clock by a time difference.

ETC **REC LAMP* <ON/OFF>**
- Select OFF when you do not want the camera recording/battery lamp at the front of the unit to light up.
- Normally select ON.

Items for PLAYER mode only

EDIT <ON/OFF>
- Select ON to minimize picture deterioration when editing.
- Normally select OFF.

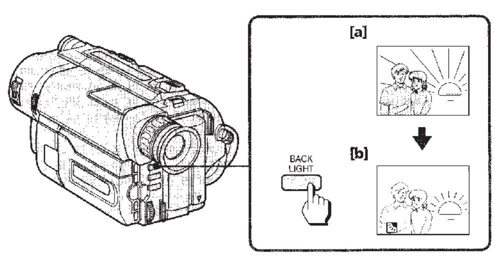
The EDIT setting works only during playback

* These settings are retained even when the battery pack is removed, as long as the lithium battery is in place.

Shooting with backlighting

When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT function.

Press BACK LIGHT. The ⊠ indicator appears in the viewfinder or on the LCD screen.



[a] Subject is too dark because of backlight.
[b] Subject becomes bright with backlight compensation.

After shooting

Be sure to release this adjustment condition by pressing BACK LIGHT again. The ⊠ indicator disappears. Otherwise, the picture will be too bright under normal lighting condition.

This function is also effective under the following conditions:
- A subject with a light source nearby or a mirror reflecting light
- A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

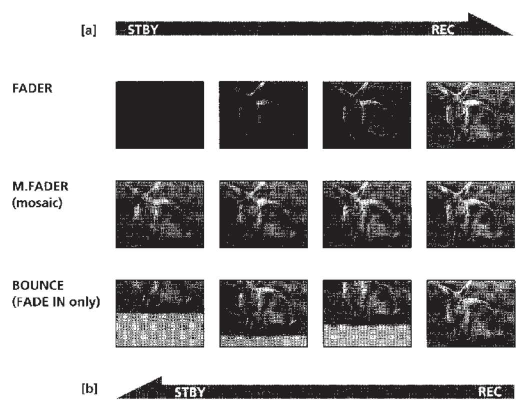
To make a fine adjustment

You can adjust the exposure manually. However, when you adjust the exposure manually, you cannot operate the BACK LIGHT function.

Using the FADER function

Selecting the fader function

You can fade in or out to give your recording a professional appearance.
When the picture fades in, the sound gradually increases. When the picture fades out, the sound gradually decreases.



MONOTONE
When fading in, the picture gradually changes from black and white to color.
When fading out, the picture gradually changes from color to black and white.

Note
When D ZOOM in the menu system is set to ON, you cannot use the BOUNCE function.

Using the fader function

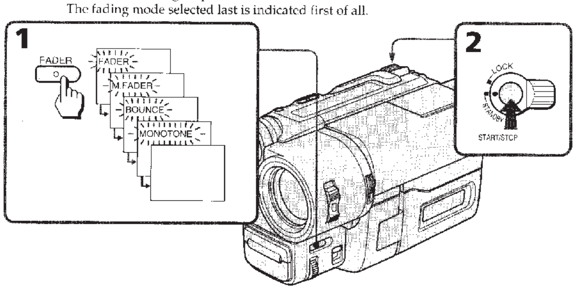
When fading in [a]

(1) While the camcorder is in Standby mode, press FADER until the desired fade indicator flashes.
(2) Press START/STOP to start recording. The fade indicator stops flashing.

When fading out [b]

(1) During recording, press FADER until the desired fade indicator flashes.
(2) Press START/STOP to stop recording. The fade indicator stops flashing, and then recording stops.

The fading mode selected last is indicated first of all.



When you use the BOUNCE function
Set D ZOOM to OFF in the menu system.

Note on the BOUNCE function
When you use the following functions, "BOUNCE" indicator does not appear.
- Wide mode
- Functions using the PICTURE EFFECT button
- Functions using the PROGRAM AE button

To cancel the fader function
Before pressing START/STOP, press FADER until the indicator disappears.

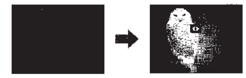
When the date or time indicator or title is displayed
The date or time indicator and title do not fade in or fade out.

When the START/STOP MODE switch is set to 5SEC or ANTI GROUND SHOOTING
You cannot use the fader function.

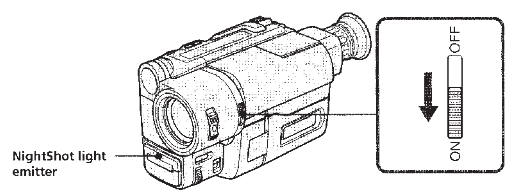
Note on the fader function
While using the BOUNCE function, you cannot use the following functions.
- Exposure
- Focus
- Zoom

Shooting in the dark (NightShot)

The NightShot function enables you to shoot a subject in a dark place. You can achieve a satisfactory recording of the ecology of nocturnal animals for observation with this function.



(1) While the camcorder is in Standby mode, slide NIGHTSHOT to ON.
(2) Press START/STOP to start recording.
▣ and "NIGHTSHOT" indicators flash.



To cancel the NightShot function
Slide NIGHTSHOT to OFF.

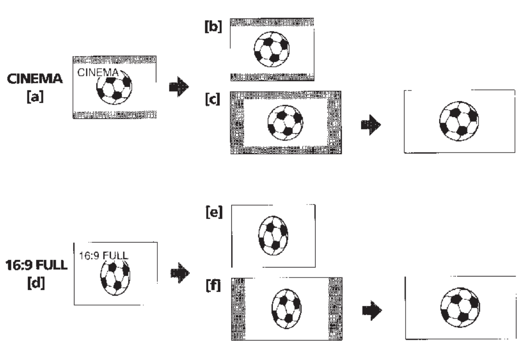
Using the NightShot Light
When you set N.S.LIGHT to ON in the menu system, the picture will be more clear. NightShot Light rays are infrared and are therefore invisible. The maximum limit of NightShot Light is about 10 feet (about 3 meters).

Notes on the NightShot
- Do not use the NightShot function in bright places (ex.outdoors). This may cause your camcorder to malfunction.
- The following functions are not operable when using the NightShot function.
  -PROGRAM AE
  -Exposure
- When you keep setting NIGHTSHOT to ON in normal recording, picture may be recorded in incorrect/unnatural color.
- If focusing is difficult with the autofocus mode when using the NightShot function, focus manually.

Using the wide mode function

Selecting the desired mode

You can record a cinemalike picture (CINEMA) or a 16:9 wide picture to watch on the 16:9 wide-screen TV (16:9 FULL).



CINEMA
Black bands appear at the top and the bottom of the screen, and the viewfinder or LCD screen [a] and a normal TV screen [b] look wide. You can also watch the picture without black bands on a wide-screen TV [c].

16:9 FULL
The picture in the viewfinder or LCD screen [d] or on a normal TV [e] is horizontally compressed. You can watch the picture of normal images on a wide-screen TV [f].

Using the wide mode function

You can select the wide mode (OFF, CINEMA, 16:9FULL) in the menu system (p. 28).

To cancel wide mode
Select OFF in the menu system.

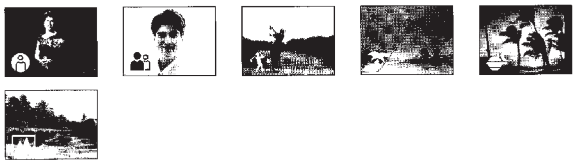
To watch the tape recorded in wide mode
To watch the tape recorded in CINEMA mode, set the screen mode of the wide-screen TV to zoom mode. To watch the tape recorded in 16:9 FULL mode, set it to full mode. For details, refer to the operating instructions of your TV.
Note that the picture recorded in 16:9 FULL mode looks compressed on a normal TV.

Notes on wide mode
- If wide mode is set to 16:9FULL, the SteadyShot function does not work and the indicator flashes (CCD-TRV43/TRV46 only).
- In wide mode, you cannot select the BOUNCE function with FADER.
- When you record in 16:9 FULL mode, the date or time indicator will be widened on the wide-screen TV.
- If you dub a tape, the tape is copied in the same mode as the original recording.
- When recording, you cannot change the mode.

Using the PROGRAM AE function

Selecting the best mode

You can select one of six PROGRAM AE (Auto Exposure) modes to suit your shooting situation, referring to the following.



Spotlight mode
For subjects in spotlight, such as at the theater or a formal event.

Soft Portrait mode
For zooming in on a still subject in telephoto mode, or for a subject behind an obstacle such as a screen. Creates a soft background for subjects such as people or flowers, and faithfully reproduces skin color.

Sports Lesson mode
For recording fast-moving subjects such as in tennis or golf games.

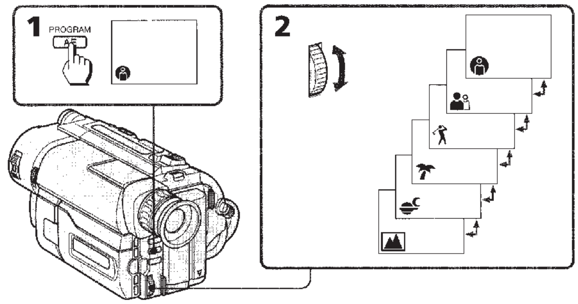
Beach & Ski mode
For people or faces in strong light or reflected light, such as at a beach in midsummer or on a ski slope.

Sunset & Moon mode
For recording subjects in dark environments such as sunsets, fireworks, neon signs, or general night views.

Landscape mode
For distant subjects such as mountains or when recording a subject behind an obstacle such as a window or screen.

Using the PROGRAM AE function

(1) Press PROGRAM AE.
(2) Turn the control dial to select the desired PROGRAM AE mode.



To turn off PROGRAM AE
Press PROGRAM AE again.

Notes on focus setting
- In the Spotlight, Sports lesson and Beach & Ski modes, you cannot take close-ups because the camcorder is set to focus only on subjects in the middle to far distance.
- In the Sunset & Moon and Landscape modes, the camcorder is set to focus only on distant subjects.

Note on PROGRAM AE
Flickering or changes in color may occur in the following modes if recording is carried out under a discharge tube such as a fluorescent lamp, sodium lamp or mercury lamp. If this happens, turn off PROGRAM AE.
– Soft Portrait mode
– Sports Lesson mode

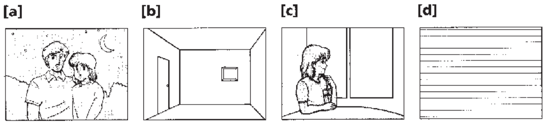
Note
When using the NightShot function, the PROGRAM AE indicator flashes to indicate that it will not operate with this function.

Focusing manually

When to use manual focus

In the following cases you should obtain better results by adjusting the focus manually.

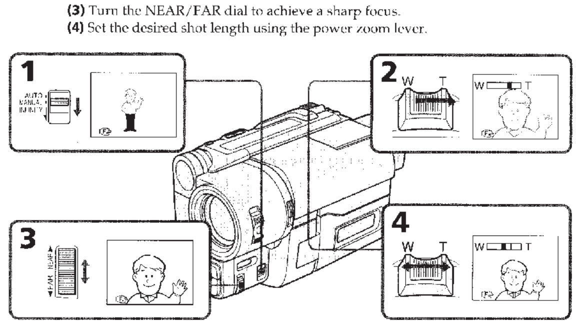
[a] [b] [c] [d]



- Insufficient light **[a]**
- Subjects with little contrast - walls, sky, etc. **[b]**
- Too much brightness behind the subject **[c]**
- Horizontal stripes **[d]**
- Subjects through frosted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod

Focusing manually

When focusing manually, first focus in telephoto before recording, and then reset the shot length.
(1) Set FOCUS to MANUAL. The indicator appears in the viewfinder or on the LCD screen.
(2) Move the power zoom lever to the end of the "T" side in the optical zoom zone.
(3) Turn the NEAR/FAR dial to achieve a sharp focus.
(4) Set the desired shot length using the power zoom lever.



To return to autofocus mode
Set FOCUS to AUTO. The indicator in the viewfinder or on the LCD screen disappears.

Shooting in relatively dark places
Shoot at wide-angle after focusing in the telephoto position.

To record a very distant subject
Push FOCUS down to INFINITY. The lens focuses on the most distant subject while FOCUS is held down. When it is released, manual focus mode is resumed.
Use this function when shooting through a window or a screen, to focus on a most distant subject.

Note on manual focusing
The following indicators may appear:
when recording a very distant subject.
when the subject is too close to focus on.

Enjoying picture effect

Selecting picture effect

You can digitally process images to obtain special effects like those in films or on the TV.

[a] [b] [c] [d] [e] [f]



PASTEL [a]
The contrast of the picture is emphasized, and the picture looks like an animated cartoon.

NEG. ART [b]
The color and brightness of the picture is reversed.

SEPIA
The picture is sepia.

B&W
The picture is monochrome (black and white).

SOLARIZE [c]
The light intensity is more clear, and the picture looks like an illustration.

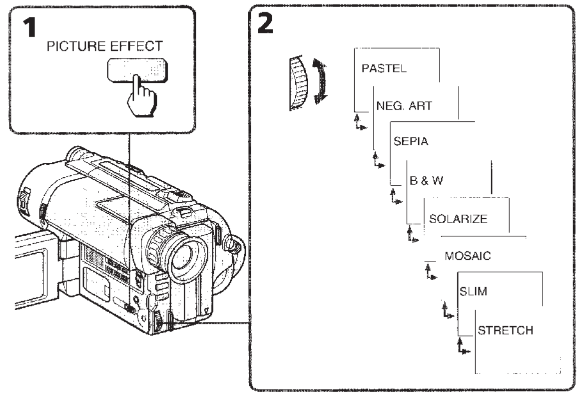
MOSAIC [d]
The picture is mosaic.

SLIM [e]
The picture expands vertically.

STRETCH [f]
The picture expands horizontally.

Using picture effect function

(1) Press PICTURE EFFECT.
(2) Turn the control dial to select the desired picture effect mode.



To turn off picture effect

Press PICTURE EFFECT. The indicator in the viewfinder or on the LCD screen goes out.

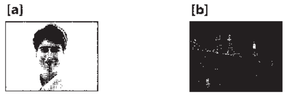
Note on the picture effect
When you turn the power off, the camcorder returns automatically to normal mode.

Adjusting the exposure

When to adjust the exposure

Adjust the exposure manually under the following cases.

[a] [b]

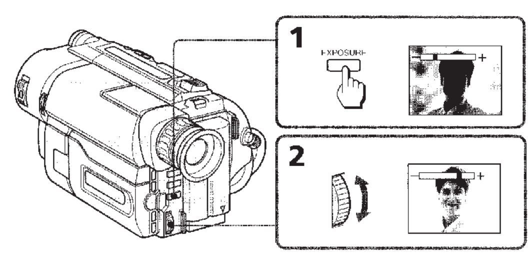


[a]
- The background is too bright (back lighting)
- Insufficient light: most of the picture is dark

[b]
- Bright subject and dark background
- To record the darkness faithfully

Adjusting the exposure

(1) Press EXPOSURE.
(2) Turn the control dial to adjust the brightness.



To return to automatic exposure mode

Press EXPOSURE again.

Shooting with the sun behind you
If the light source is behind your subject, or in the following situations, the subject will be recorded too dark.
- The subject is indoors and there is a window behind the subject.
- Bright light sources are included in the scene.
- When shooting a person wearing white or shiny clothes in front of a white background, the face will be recorded too dark.

Shooting in the dark
We recommend you to use the built-in light or a video light (not supplied). To get the best color, you must maintain a sufficient light level.

Note
You cannot adjust the exposure when using the NightShot function.

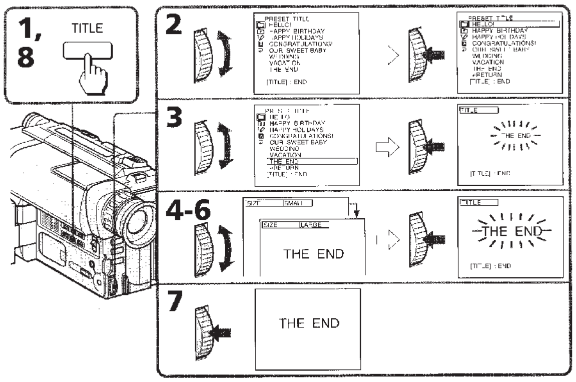
When you adjust the exposure manually
- BACK LIGHT does not work.
- If you change the PROGRAM AE mode, the camcorder automatically returns to automatic exposure mode.

Superimposing a title

You can select one of eight preset titles and two custom titles. You can also select the language, color, size and position of titles.

Superimposing titles

(1) Press TITLE to display the title menu.
(2) Turn the control dial to select ☐ , then press the dial.
(3) Turn the control dial to select the desired title, then press the dial. The titles are displayed in the language you selected.
(4) Turn the control dial to select the color, size, or position, then press the dial.
(5) Turn the control dial to select the desired item, then press the dial.
(6) Repeat step 4 and 5 until the title is arranged as desired.
(7) Press control dial again to complete the setting.
(8) When you want to stop recording the title, press TITLE.



To superimpose the title from beginning
After step 7, press START/STOP to start recording.

To superimpose the title while you are recording
After pressing START/STOP to start recording, start from step 1. In this case, beep is not heard.

To select the language of preset title
When you want to select the language, select ◙ before step 2. Then select language and return to step 2.

To use the custom title
When you want to use the custom title, select ◘ in step 2.

Notes on superimposing a title
- If you have not given any custom title, "– – – – ..." appears on the display.
- The FADER function works while the title is displayed, however, the title does not fade.
- If you display the menu or title menu while superimposing a title, the title is not recorded while the menu or title menu is being displayed.

Title color changes as follows :
WHITE ←→ YELLOW ←→ VIOLET ←→ RED ←→ CYAN ←→ GREEN ←→ BLUE

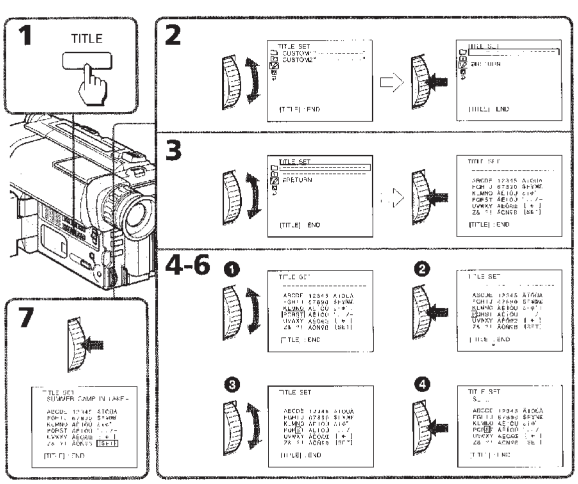
Title size changes as follows :
SMALL ←→ LARGE

Title position changes as follows :
When you select the title size "SMALL", you can choose 9 positions. When you select the title size "LARGE" you can choose 8 positions.

Notes on the title
- Depending on size or position of the title, both of date and time or either of them is not displayed.
- If you input 13 characters or more for a LARGE title, the title is automatically reduced into a proper size after the position is set.
- When the title is displayed, LCD BRIGHT and VOLUME indicators do not appear.

Making your own titles

You can make up to two titles and store them in the camcorder. We recommend to set the POWER switch to PLAYER or eject the cassette before you begin.
Your title can have up to 20 characters.
(1) Press TITLE to display the title menu.
(2) Turn the control dial to select ✎ , then press the dial.
(3) Turn the control dial to select the first line (CUSTOM1) or second line (CUSTOM2), then press the dial.
(4) Turn the control dial to select the column of the desired character, then press the dial.
(5) Turn the control dial to select the desired character, then press the dial.
(6) Repeat step 4 and 5 until you finish the title.
(7) For finishing the titling work, turn the control dial to select SET, then press the dial.



To edit a title you have stored
In step 3, select CUSTOM1 or CUSTOM2, depending on which title you want to edit, then change the title.

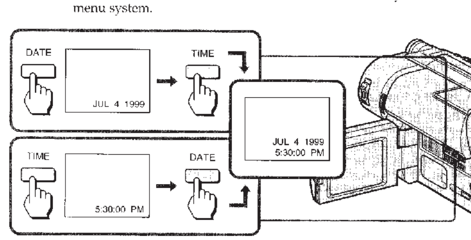
Note
You can not enter over 20 characters title.

If you take 5 minutes or longer to enter characters while a cassette is in the camcorder
The power goes off automatically. Characters you have entered remain. Turn STANDBY down once and then up again, then proceed from step 1.

To delete a title
In step 4, turn the control dial to select [←] then press the dial. The last character is erased. Repeat this step until all characters are deleted.

Recording with the date/time

Before you start recording or during recording, press DATE or TIME. You can record the date or time displayed in the viewfinder or on the LCD screen with the picture.
Press DATE (or TIME), then press TIME (or DATE) to display the date and time together.
The clock is set to East Coast Standard time at the factory. You can reset the clock in the menu system.

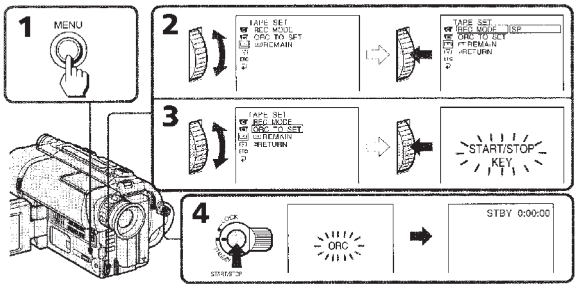


To stop recording with the date and/or time
Press DATE and/or TIME again. The date and/or time indicator disappears. The recording continues.

Optimizing the recording condition

Use this feature to check the tape condition before recording, so that you can get the best possible picture (ORC).

(1) While the camcorder is in Standby mode, press MENU to display the menu.
(2) Turn the control dial to select [tape icon], then press the dial.
(3) Turn the control dial to select ORC TO SET, then press the dial.
"START/STOP KEY" flashes.
(4) Press START/STOP.
The camcorder takes about 5 to 10 seconds to check the tape condition and then returns to Standby mode.



Each time you insert the cassette

Perform the above procedures.

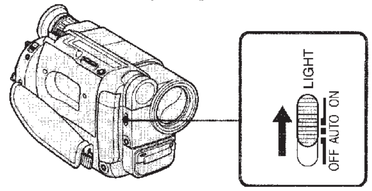
Notes on the ORC function

- When you set ORC TO SET, the recording on the tape is erased for about 0.1 second so that the camcorder can check the tape condition. Be careful when you use a recorded tape. The 0.1 second blank is erased if you record from the point where you set ORC TO SET for more than 2 seconds, or if you record over the blank.
- You cannot use this function on a tape with the red mark on the cassette exposed.
- ORC stands for "Optimizing the Recording Condition."

Using the built-in light

You can use the built-in light to suit your shooting situation. The recommended distance between the subject and camcorder is about 5 feet (1.5 m).

While the camcorder is in Standby mode, slide LIGHT to ON. The built-in light turns on.
The built-in light turns on/off by turning on/off STANDBY.



To stop using the built-in light

Slide LIGHT to OFF.

To turn on the built-in light automatically

Slide LIGHT to AUTO.
The built-in light automatically turns on and off according to the ambient brightness. However, if the built-in light turns on for more than about 5 minutes, it automatically turns off. In this case, turn STANDBY down once and turn it up again.

Notes

- The battery pack is quickly discharging while the built-in light is turned on. Slide LIGHT to OFF when not in use.
- When you do not use the camcorder, slide LIGHT to OFF and remove the battery pack to avoid turning on the built-in light accidentally.
- When flickering occurs when you shoot white and bright subjects in AUTO mode, slide LIGHT to ON.
- The built-in light may turn on/off when you use the PROGRAM AE or BACK LIGHT function.
- When inserting or ejecting a cassette, the built-in light may be turned off.

CAUTION

Be careful not to touch the lighting section, because the plastic window and surrounding surfaces are hot while the light is on. It remains hot for a while after the light is turned off.

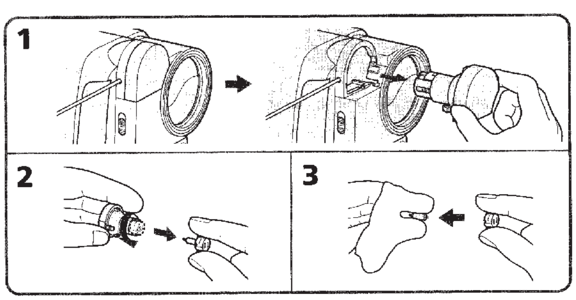
DANGER

Not to be handled by children.
Emits intense heat and light.
Use with caution to reduce the risk of fire or injury to persons.
Do not direct light at persons or materials from less than 4 feet (1.22 meters) during use and until cool.
Slide LIGHT to OFF when not in use.

Replacing the bulb

Use the Sony XB-3D halogen lamp (not supplied). The supplied halogen lamp is not on the market. Purchase the Sony XB-3D halogen lamp.
Remove the power source before replacing the bulb.

(1) While pushing the hole under the built-in light unit using a wire, remove the unit.
(2) Turn the bulb housing counterclockwise and detach from the built-in light unit.
(3) Replace the bulb using a dry cloth.
(4) Attach the bulb housing turning it clockwise, then replace the built-in light unit.



CAUTION

- When replacing the bulb, use only the Sony XB-3D halogen lamp (not supplied) to reduce the risk of fire.
- To prevent possible burn hazard, disconnect the power source before replacing and do not touch the bulb until the bulb becomes cool enough to handle (for about 30 minutes or more).

Note

To prevent the bulb from being smudged with finger prints, handle it with a dry cloth, etc. If the bulb is smudged, wipe it completely.

Releasing the STEADYSHOT function

– CCD-TRV43/TRV46 only

When the SteadyShot function is working, the camcorder compensates for camera-shake.

You can release the SteadyShot function when you do not need to use the SteadyShot function. The "[SteadyShot off icon]" indicator appear in the viewfinder or on the LCD screen. You do not need to use the SteadyShot function when shooting a stationary object with a tripod. You can select ON or OFF in the menu system (p. 28).

To activate the SteadyShot function again

Set STEADYSHOT to ON in the menu system.

Notes on the SteadyShot function

- The SteadyShot function will not correct excessive camera-shake.
- When you set STEADYSHOT to ON or OFF in the menu system, the exposure may fluctuate.
- SteadyShot does not operate in 16:9 FULL mode. If you set STEADYSHOT to ON in the menu system, the [SteadyShot icon] indicator flashes.

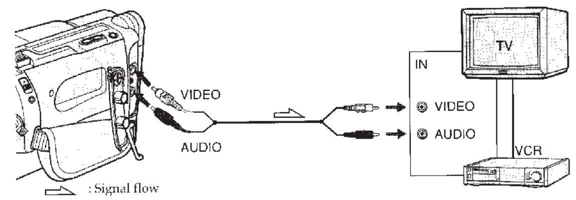
Watching on a TV screen

Connect the camcorder to your TV or VCR to watch the playback picture on the TV screen. When monitoring the playback picture by connecting the camcorder to your TV, we recommend you to use house current for the power source.

While playing back on a TV screen, close the LCD panel. Otherwise, picture distortion may occur.

Connecting directly to a TV/VCR with Video/Audio input jacks

When connecting the A/V connecting cable, make sure you connect the plug to jacks of the same color.
Open the jack cover. With using the supplied A/V connecting cable, connect the camcorder to the LINE IN inputs on the TV or VCR connected to the TV. Set the TV/VCR selector on the TV to VCR. When connecting to the VCR, set the input selector on the VCR to LINE.



To connect to a TV or VCR without Video/Audio input jacks
Use an NTSC type RFU adaptor (not supplied).

Using the AV cordless IR receiver

–CCD-TRV43/TRV46 only

Once you connect the AV cordless IR receiver (not supplied) having the LASER LINK mark to your TV or VCR, you can easily view the picture on your TV. For details, refer to the operating instructions of the AV cordless IR receiver.
LASER LINK is a system which transmits and receives a picture and sound between video equipment having the mark by using infrared rays.
LASER LINK is a trademark of Sony Corporation.

To play back on a TV

(1) After connecting your TV and AV cordless IR receiver, set the POWER switch on the AV cordless IR receiver to ON.
(2) Set the POWER switch on the camcorder to PLAYER.
(3) Turn the TV on and set the TV/VCR selector on the TV to VCR.
(4) Press LASER LINK. The lamp of the LASER LINK button lights up.
(5) Press ► on the camcorder to start playback.
(6) Point the LASER LINK emitter at the AV cordless IR receiver.

To cancel the LASER LINK function

Press LASER LINK.

If you use a Sony TV
- You can turn on the TV automatically when you press the LASER LINK or ► button. To do so, set the AUTO TV ON to ON in the menu system and turn the TV's main switch on, then do either of the following;
  - Point the LASER LINK emitter towards the TV's remote sensor and press LASER LINK.
  - Turn on the LASER LINK button and press ►.
- You can switch the video input of the TV automatically to the one which the AV cordless IR receiver is connected. To do so, set the AUTO TV ON to ON and the TV INPUT to the same video input (1,2,3) in the menu system. With some models, however the picture and sound may be disconnected momentarily when the video input is switched.
- The above feature may not work with some TV models.

Note
When LASER LINK is activated (the LASER LINK button is lit), the camcorder consumes power. Press and turn off the LASER LINK button when it is not needed.

Advanced operations

Editing onto another tape

You can create your own video program by editing with any other 8 mm, Hi8 Hi8, mini DV, DV, VHS, S-VHS, VHSC, S-VHSC, Betamax or ED Betamax VCR that has video/audio inputs.

Before editing

Connect the camcorder to the VCR using the supplied A/V connecting cable.
Set the input selector on the VCR to LINE, if available.
Set EDIT to ON in the menu system (p. 29).

Starting editing

Turn down the volume of the camcorder while editing. Otherwise, picture distortion may occur.
(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert your recorded tape into the camcorder.
(2) Play back the recorded tape on the camcorder until you locate the point just before where you want to start editing, then press ❚❚ to set the camcorder in playback pause mode.
(3) On the VCR, locate the recording start point and set the VCR in recording pause mode.
(4) First press ❚❚ on the camcorder, and after a few seconds press ❚❚ on the VCR to start editing.

To edit more scenes

Repeat steps 2 to 4.

To superimpose the title while you are editing

You can superimpose the title while you are editing. Refer to "Superimposing a title" (p. 44).

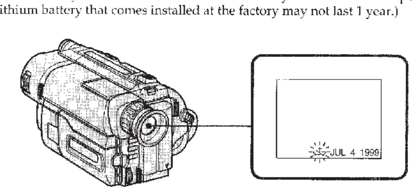
To stop editing

Press ■ on both the camcorder and the VCR.

Note on Fine Synchro Edit
If you connect a video deck that has the Fine Synchro Edit feature to the LANC jack of the camcorder, using a LANC cable (not supplied), the edit will be even more precise.

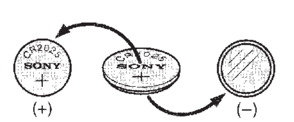
Changing the lithium battery in the camcorder

Your camcorder is supplied with a lithium battery installed. When the battery becomes weak or dead, the indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of any other battery may present a risk of fire or explosion.** Discard used batteries according to the manufacturer's instructions.
The lithium battery for the camcorder lasts for about 1 year under normal operation. (The lithium battery that comes installed at the factory may not last 1 year.)



Notes on lithium battery

- **Keep the lithium battery out of the reach of children. Should the battery be swallowed, immediately consult a doctor.**
- Wipe the battery with a dry cloth to assure a good contact.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- Note that the lithium battery has a positive (+) and a negative (–) terminals as illustrated. **Be sure to install the lithium battery so that terminals on the battery match the terminals on the camcorder.**



WARNING
The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

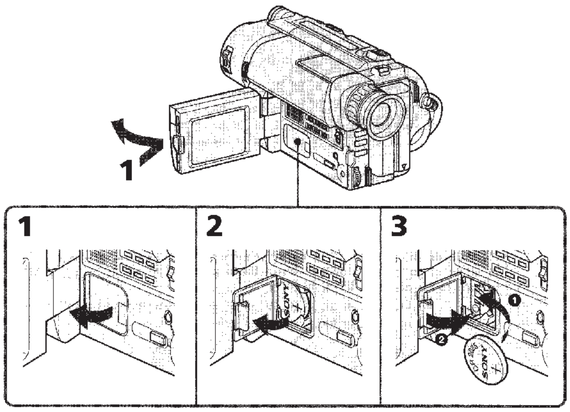
Additional information

Changing the lithium battery in the camcorder

Changing the lithium battery

When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and other items in the menu system retained by the lithium battery.

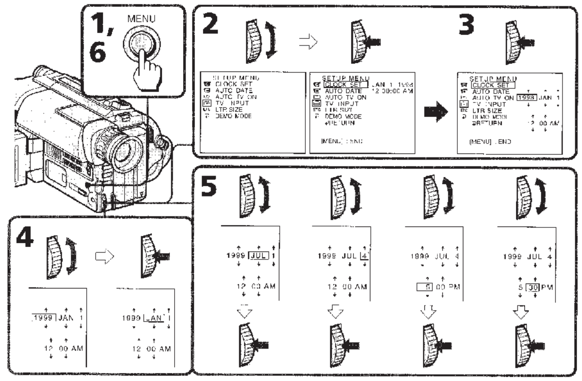
(1) Open the LCD panel and open the lid of the lithium battery compartment.
(2) Push the lithium battery down once and pull it out from the holder.
(3) Install the lithium battery with the positive (+) side facing out. Close the lid.



Resetting the date and time

You can reset the date and time in the menu system.

(1) While the camcorder is in Standby mode, press MENU to display the menu.
(2) Turn the control dial to select ⧉, then press the dial.
(3) Turn the control dial to select CLOCK SET, then press the dial.
(4) Turn the control dial to adjust the desired year, then press the dial.
(5) Set the month, day, hour and minute by turning the control dial and pressing the dial.
(6) Press MENU to erase the menu display.



To correct the date and time setting

Repeat the above procedure.

To check the preset date and time

Press DATE to display the date indicator.
Press TIME to display the time indicator.
When you press the same button again, the indicator goes off.

The year changes as follows:

1998 ↔ 1999 ← · · · · → 2029

Note on the time indicator

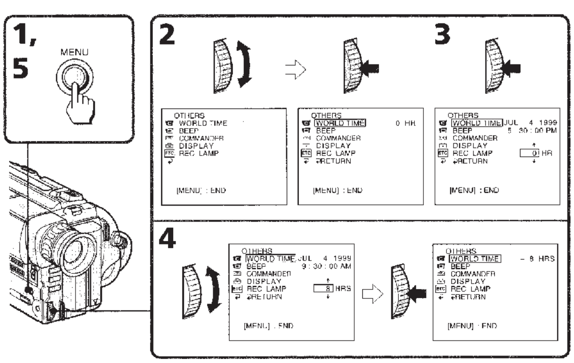
The internal clock of this camcorder operates on a 12-hour cycle.

- 12:00 AM stands for midnight.
- 12:00 PM stands for noon.

Simple setting of clock by time difference

You can easily set the clock for a local time by a time difference in the menu system.

(1) While the camcorder is in the standby mode, press MENU to display the menu.
(2) Turn the control dial to select ETC, then press the dial.
(3) Turn the control dial to select WORLD TIME, then press the dial.
(4) Turn the control dial to set a time difference, and press the dial. The hour of clock changes in relation to a time difference which you set.
(5) Press MENU to erase the menu display.



Note on WORLD TIME

If the time is not set, WORLD TIME does not work.

Usable cassettes and playback modes

Selecting cassette types

This Hi8 system is an extension of the standard 8 mm system, and was developed to realize higher picture quality.

You can use either Hi8 or standard 8 mm video cassette for this camera. When you use a Hi8 video cassette, the recording is made in the Hi8 system. When you use a standard 8 mm video cassette, the recording is made in the standard 8 mm system. Standard 8 mm video cassette is incapable of recording in the Hi8 system.

If you intend to use a standard 8 mm video recorder/player to play back a video tape, you are required to use a standard 8 mm video cassette for recording.

When you play back

The playback mode (SP/LP) and system (Hi8/standard 8 mm) are selected automatically according to the format in which the tape has been recorded. The quality of the recorded picture in LP mode, however, will not be as good as that in SP mode.

Foreign 8 mm video

Because the TV color systems differ from country to country, you may not be able to play back foreign pre-recorded tapes. Refer to the list of "Using your camcorder abroad" to check the TV color system of foreign countries.

Tips for using the battery pack

This section shows you how you can get the most out of your battery pack.

Preparing the battery pack

Always carry additional batteries
Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery life is shorter in a cold environment
Battery efficiency is decreased, and the battery will be used up more quickly, if you are recording in a cold environment.

To save battery power
Turn STANDBY down when not recording to save battery power.
A smooth transition between scenes can be made even if recording is stopped and started again. While you are positioning the subject, selecting an angle, or looking through the viewfinder lens or on the LCD screen, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.
Be sure and remove the battery pack after using the camcorder.

When to replace the battery pack

While you are using your camcorder, the remaining battery indicator decreases gradually as battery power is used up. Remaining time in minutes appears.



When the remaining battery indicator reaches the lowest point, the ⊲ indicator may appear and start flashing in the viewfinder or on the LCD screen.
When the ⊲ indicator changes from slow flashing to rapid flashing while you are recording, set the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain a smooth transition between scenes after the battery pack has been replaced.

Notes on the rechargeable battery pack

Caution
Never leave the battery pack in temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight.

The battery pack heats up
During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern and is normal.

Be sure to observe the following
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor try to disassemble the battery pack.
- Do not expose the battery pack to any mechanical shock.

The life of the battery pack
If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging temperature
You should charge batteries at temperatures from 50°F to 86°F (from 10°C to 30°C). Lower temperatures require a longer charging time.

Notes on the "InfoLITHIUM" battery pack

What is "InfoLITHIUM"
The "InfoLITHIUM" is a lithium ion battery pack which can exchange data with compatible video equipment about its battery consumption.
When you use this battery pack with video equipment having the InfoLITHIUM mark, the video equipment will indicate the remaining battery time in minutes*. However, if you use it with video equipment not having this mark, the remaining battery capacity will not be indicated in minutes.
"InfoLITHIUM" is a trademark of Sony Corporation.
* The indication may not be accurate depending on the condition and environment which the equipment is used under.

How the battery consumption is displayed
The power consumption of the camcorder changes depending on its use, such as how the autofocusing is working.
While checking the condition of the camcorder, the "InfoLITHIUM" battery pack measures the battery consumption and calculates the remaining battery power. If the condition changed drastically, the remaining battery indication may suddenly decrease or increase by more than 2 minutes.
Even if 5 to 10 minutes is indicated as the battery remaining time on the LCD screen or in the viewfinder, the ⊲ indicator may also flash under some condition.

To obtain more accurate remaining battery indication
Set the camcorder to recording standby mode and point towards a stationary object. Do not move the camcorder for 30 seconds or more.
- If the indication seems incorrect, recharge the battery pack fully (Full charge[1]). Note that if you have used the battery in a hot or cold environment for long time, or you have repeated charging many times, the battery pack may not be able to show the correct time even after being fully charged.
- After you have used the "InfoLITHIUM" battery pack with an equipment not having the InfoLITHIUM mark, make sure that you use up the battery pack on the equipment having the InfoLITHIUM mark and then recharge fully.

Why the remaining battery indication does not match the continuous recording time in the operating instructions
The recording time is affected by the environmental temperature and conditions. The recording time becomes very short in a cold environment. The continuous recording time in the operating instructions is measured under the condition of using a fully charged (or normal charged) battery pack in 77°F (25°C). As the environmental temperature and condition are different when you actually use the camcorder, the remaining battery time is not same as the continuous recording time in the operating instructions.

[1] Full charge: Charging until FULL appears in the display window.

Maintenance information and precautions

Moisture condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. Please take the following precautions.

Inside the camcorder
If there is moisture inside the camcorder, the beep sounds and the ◙ indicator flashes. If this happens, none of the functions except cassette ejection will work. Open the cassette compartment, turn off the camcorder, and leave it about 1 hour. When ⏏ indicator flashes at the same time, the cassette is inserted in the camcorder. Eject the cassette, turn off the camcorder, and leave also the cassette about 1 hour. The camcorder can be used again if the ◙ indicator does not appear when the power is turned on again.

On the lens
If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to prevent moisture condensation
When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.
(1) Be sure to tightly seal the plastic bag containing the camcorder.
(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

Video head cleaning

To ensure normal recording and clear pictures, clean the video heads. When the ⊗ indicator and " CLEANING CASSETTE" message appear one after another or playback pictures are "noisy" or hardly visible, the video heads may be dirty.



[a] ➡ [b]

[a] Slightly dirty
[b] Very dirty

If this happens, clean the video heads with the Sony V8-25CLD cleaning cassette (not supplied). After checking the picture, if it is still "noisy," repeat the cleaning. (Do not repeat cleaning more than 5 times in one session.)

Caution

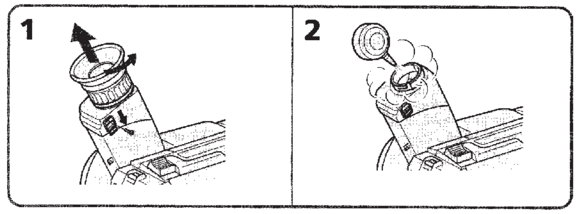
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note

If the Sony V8-25CLD/V8-25CLDR cleaning cassette is not available in your area, consult your nearest Sony dealer.

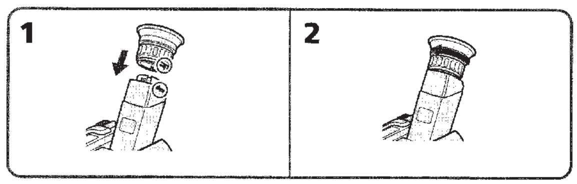
Removing dust from inside the viewfinder

(1) Remove the screw with a screwdriver (not supplied). Then, while sliding the RELEASE knob, turn the eyecup in the direction of the arrow and pull it out.
(2) Clean the surface with a blower sold on the market.



To reattach the eyecup

(1) Align the groove on the eyecup with the • mark on the barrel.
(2) Turn the eyecup in the direction of the arrow. Then replace the screw.



Caution

Do not remove any other screws. You may remove only the screw to remove the eyecup.

Precautions

Camcorder operation

- Operate the camcorder on 7.2 V (battery pack) or 8.4 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid get inside the casing, unplug the camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch setting to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.
- Do not push the LCD screen.
- If the camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- While using the camcorder, the back of the LCD screen may heat up. This is not a malfunction.

Built-in light

- Do not knock or jolt the built-in light while it is turned on as it may damage the bulb or shorten the life of the bulb.
- Do not leave the built-in light on while it is resting on or against something; it may cause a fire or damage the built-in light.

On handling tapes

Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type of tape, thickness of tape and if the recording tab is in or out.

Camcorder care

- When the camcorder is not to be used for a long time, remove the tape. Periodically operate the comcorder both in the CAMERA and PLAYER modes and play back a tape for about 3 minutes.
- If fingerprints or debris make the LCD screen dirty, we recommend using a LCD Cleaning Kit (not supplied) to clean the LCD screen.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or in a dusty place, protect it from the sand or dust with some protector such as Sony sports pack. Sand or dust may cause the unit to malfunction, and sometimes this malfunction cannot be repaired.

AC power adaptor

- Unplug the unit from the wall outlet when not in use for a long time. To disconnect the power cord, pull it out by the plug. Never pull the power cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the power cord forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

Notes on dry batteries

To avoid possible damage from battery leakage or corrosion, observe the following.

- Be sure to insert the batteries in the correct direction.
- Dry batteries are not rechargeable.
- Do not use a combination of new and old batteries.
- Do not use different types of batteries.
- The batteries slowly discharge while not in use.
- Do not use a battery that is leaking.

If battery leakage occurred

- Wipe off the liquid in the Remote Commander carefully before replacing the batteries.
- If you touch the liquid, wash it off with water.
- If the liquid get into your eyes, wash your eyes with a lot of water and then consult a doctor.

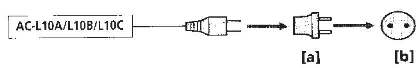
If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Using your camcorder abroad

Each country or area has its own electric and TV color systems. Before using your camcorder abroad, check the following points.

Power sources

You can use your camcorder in any country or area with the supplied AC power adaptor within 100 V to 240 V AC, 50/60 Hz.
Use a commercially available AC plug adaptor **[a]**, if necessary, depending on the design of the wall outlet **[b]**.



Difference in color systems

This camcorder is an NTSC system based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV.
Check the following list.

NTSC system
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system
Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system
Brazil

PAL-N system
Argentina, Paraguay, Uruguay

SECAM system
Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Ukraine, etc.

Trouble check

If you run into any problem using the camcorder, use the following table to troubleshoot the problem. Should the difficulty persist, disconnect the power source and contact your Sony dealer or local authorized Sony service facility.

Camcorder

Power

Symptom	Cause and/or Corrective Actions
The power is not on.	• The battery pack is not installed. → Install the battery pack. (p. 6) • The battery is dead. → Use a charged battery pack. (p. 7) • The AC power adaptor is not connected to a wall outlet. → Connect the AC power adaptor to a wall outlet. (p. 24)
The power goes off.	• While being operated in CAMERA mode, the camcorder has been in Standby mode for more than 5 minutes. → Turn STANDBY down once and then up again. (p. 11) • The battery is dead. → Use a charged battery pack. (p. 7)
The battery pack is quickly discharged.	• The camcorder does not operate when using a battery pack that is not an "InfoLITHIUM" battery pack. → Use an "InfoLITHIUM" battery pack. (p. 62) • The ambient temperature is too low. (p. 61) • The battery pack has not been charged fully. → Charge the battery pack again. (p. 7) • The battery pack is completely dead, and cannot be recharged. → Use another battery pack. (p. 61)
While charging the battery pack, no indicator appears or the indicator flashes in the display window.	•The AC power adaptor is disconnected. → Connect it firmly. • Something is wrong with the battery pack. → Contact your Sony dealer or local authorized Sony service facility.

Operation

Symptom	Cause and/or Corrective Actions
START/STOP does not operate.	• The tape is stuck to the drum. → Eject the tape. (p. 10) • The tape has run out. → Rewind the tape or use a new one. (p. 10, 20) • The POWER switch is set to PLAYER. → Set it to CAMERA. (p. 11) • The tab on the cassette is out (red). → Use a new tape or slide the tab. (p. 10)
Recording stops in a few seconds.	• The START/STOP MODE switch is set to 5SEC or ANTI GROUND SHOOTING ⊥. → Set it to ⊔. (p. 14)

(to be continued)

Trouble check

Symptom	Cause and/or Corrective Actions
The cassette cannot be removed from the holder.	• The battery is dead. → Use a charged battery pack or the AC power adaptor. (p. 7, 24)
◙ and ≜ indicators flash and no function except for cassette ejection works.	• Moisture condensation has occurred. → Remove the cassette and leave the camcorder for at least 1 hour. (p. 63)
The date or time indicator is flashing.	• You pressed DATE and TIME together for more than 2 seconds. → The camcorder is not malfunctioning. You may start recording. Flashing will stop soon. • The lithium battery is weak or dead. → Replace the lithium battery with a new one. (p. 56)
The tape does not move when a video control button is pressed.	• The POWER switch is set to CAMERA or OFF. → Set it to PLAYER. • The tape has run out. → Rewind the tape or use a new one. (p. 20)
The Steadyshot function does not activate. (CCD-TRV43/TRV46 only)	• STEADYSHOT is set to OFF in the menu system. → Set it to ON. (p. 51) • The Steadyshot function does not work when the wide mode is set to 16:9 FULL.
The autofocusing function does not work.	• FOCUS is set to MANUAL. → Set it to AUTO. (p. 39) • Shooting conditions are not suitable for autofocus. → Set FOCUS to MANUAL to focus manually. (p. 39)
The fader function does not work.	• The START/STOP MODE switch is set to 5SEC or ANTI GROUND SHOOTING ⊥. → Set it to ⊔. (p. 14)
The date or time indicator disappears.	• Reset the date and time. (p. 57)
Exposure adjustment or the PROGRAM AE function does not work.	• The NIGHTSHOT switch is set to ON. → Set it to OFF.

Picture

Symptom	Cause and/or Corrective Actions
The image on the viewfinder screen is not clear.	• The viewfinder lens is not adjusted. → Adjust the viewfinder lens. (p. 12)
A vertical band appears when a subject such as lights or a candle flame is shot against a dark background.	• The contrast between the subject and background is too high. The camcorder is not malfunctioning. → Change locations.

Trouble check

Symptom	Cause and/or Corrective Actions
A vertical band appears when shooting a very bright subject.	• The camcorder is not malfunctioning.
The playback picture is not clear.	• EDIT is set to ON in the menu system. → Set it to OFF. (p. 29)
The picture is "noisy".	• The video heads may be dirty. → Clean the heads using the Sony V8-25CLD/V8-25CLDR cleaning cassette (not supplied). (p. 64)
The picture does not appear in the viewfinder.	• The LCD panel is open. → Close the LCD panel. (p. 15)
An unknown picture is displayed in the viewfinder or on the LCD screen.	• If 10 minutes elapse after you set the POWER switch to CAMERA without inserting a cassette, the camcorder automatically starts the demonstration or DEMO is set ON in the menu system. → Insert the cassette and the demonstration stops. You can deactivate the demonstration. (p. 29)
The picture does not appear on the LCD screen.	• Incorporated fluorescent tube is worn out. → Please contact your nearest Sony dealer.
The five digit code appears.	• The self-diagnosis function is activated. → Check the code and solve the problem. (p. 72)
Picture appears too bright, and the subject does not appear in the viewfinder or on the LCD screen.	• The NIGHTSHOT switch is set to ON in a bright place. → Set it to OFF, or use the NightShot function in a dark place. (p. 33)
Picture is recorded in incorrect/ unnatural color.	• The NIGHTSHOT switch is set to ON. → Set it to OFF. (p. 33)

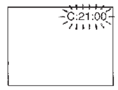
Others

Symptom	Cause and/or Corrective Actions
The supplied Remote Commander does not work.	• COMMANDER is set to OFF in the menu system. → Set it to ON. (p. 28) • Something is blocking the infrared rays. → Remove the obstacle. • The batteries are not inserted with the correct polarity. → Insert the batteries with the correct polarity. (p. 79) • The batteries are dead. → Insert new ones. (p. 79)
The beep sounds for 5 seconds.	• Moisture condensation has occurred. → Remove the cassette and leave the camcorder for at least 1 hour. (p. 63) • Some troubles occur in your camcorder. → Remove the cassette and insert it again, then operate the camcorder.
There is dust in the viewfinder.	• Detach the eyecup and clean the viewfinder lens. (p.65)

Self-diagnosis display

The camcorder has a self-diagnosis display. This function displays the camcorder's condition with five digits (a combination of a letter and figures) in the viewfinder, on the LCD screen or in the display window. If this occurs, check the following code chart. The five-digit display informs you of the camcorder's current condition. The last two digits (indicated by □□) will differ depending on the state of the camcorder.

LCD screen

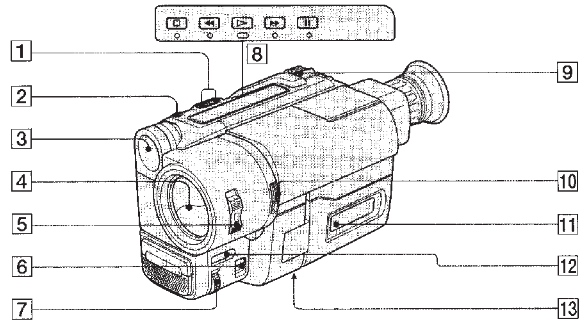


Self-diagnosis display
- C:□□:□□
  You can service the camcorder yourself.
- E:□□:□□
  Contact your Sony dealer or local authorized Sony facility.

Five-digit display	Cause and/or Corrective Actions
C:21:□□	• Moisture condensation has occurred. → Remove the cassette and leave the camcorder for at least 1 hour. (p. 63)
C:22:□□	• The video heads are dirty. → Clean the heads using the Sony V8-25CLD/V8-25CLDR cleaning cassette (not supplied). (p. 64)
C:23:□□	• You are using a battery pack that is not an "InfoLITHIUM" battery pack. → Use an "InfoLITHIUM" battery pack. (p. 62)
C:31:□□ C:32:□□	• A serviceable situation not mentioned above has occurred. → Remove the cassette and insert it again, then operate the camcorder. → Disconnect the power cord of the AC power adaptor or remove the battery pack. After reconnecting the power source, operate the camcorder.
E:61:□□ E:62:□□	• A camcorder malfunction which you cannot service has occurred. → Contact your Sony dealer or local authorized Sony service facility and inform them of the five digits. (example: E:61:10)

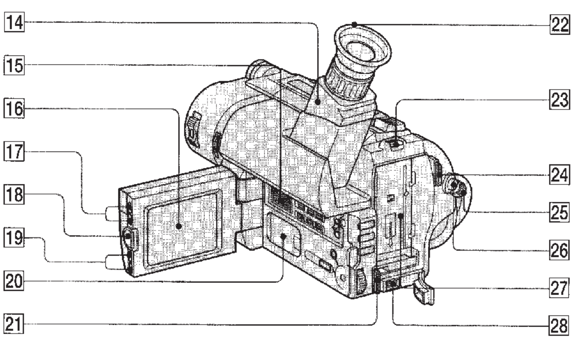
If you are unable to resolve the problem, contact your Sony dealer or local authorized Sony service facility.

Identifying the parts



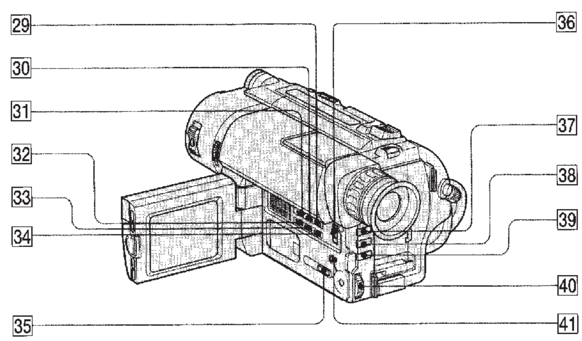
1. **EDITSEARCH button** (p. 19)
2. **LASER LINK button** (CCD-TRV43/TRV46 only) (p. 53)
3. **Built-in light** (p. 49)
4. **Lens cover**
5. **POWER switch** (p. 11)
6. **FOCUS switch** (p. 39)
7. **NEAR/FAR dial** (p. 39)
8. **Video control buttons** (p. 20)
   ■ STOP (stop)
   ◄◄ REW (rewind)
   ► PLAY (playback)
   ►► FF (fastforward)
   ❚❚ PAUSE (pause)
9. **Power zoom lever** (p. 13)
10. **NIGHTSHOT switch** (p. 33)
11. **Display window** (p. 81)
12. **FADER button** (p. 32)
13. **Tripod receptacle** (p. 18)
    Make sure that the length of the tripod screw is less than 9/32 inch (6.5 mm) otherwise, you cannot attach the tripod securely and the screw may damage the camcorder.

Identifying the parts

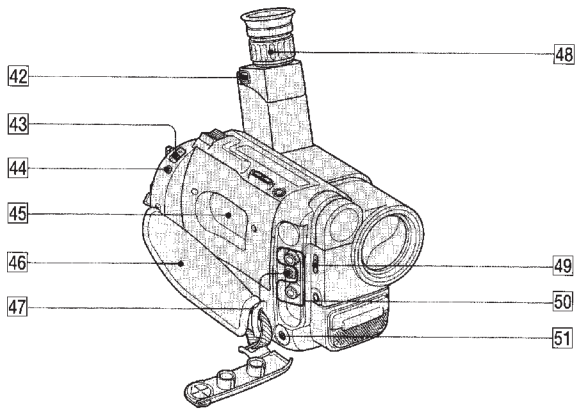


14. **Viewfinder** (p. 12)
15. **Speaker** (p. 20, 21)
16. **LCD screen** (p. 15)
17. **LCD BRIGHT buttons** (p. 15)
18. **OPEN button** (p. 14)
19. **VOLUME buttons** (p. 20)
20. **Lithium battery compartment** (p. 56)
21. **Hook for shoulder strap** (p. 80)
22. **Eyecup**
23. **BATT RELEASE lever** (p. 9)
24. **Hook for shoulder strap** (p. 80)
25. **STANDBY switch** (p. 11)
26. **START/STOP button** (p. 11)
27. **Battery mounting surface**
28. **DC IN jack** (p. 7, 24)

Identifying the parts



29. **COUNTER RESET button** (p. 12)
30. **TIME button** (p. 47)
31. **DATE button** (p. 47)
32. **DISPLAY button** (p. 21)
33. **TITLE button** (p. 44)
34. **END SEARCH button** (p. 23)
35. **PICTURE EFFECT button** (p. 41)
36. **START/STOP MODE switch** (p. 14)
37. **BACK LIGHT button** (p. 30)
38. **PROGRAM AE button** (p. 37)
39. **EXPOSURE button** (p. 42)
40. **Control dial** (p. 26)
41. **MENU button** (p. 26)



42 **Eyecup RELEASE knob** (p. 65)

43 **EJECT switch** (p. 10)

44 **LANC ⌁ control jack**
⌁ stands for Local Application Control Bus System. The ⌁ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.

45 **Cassette compartment** (p. 10)

46 **Grip strap** (p. 17)

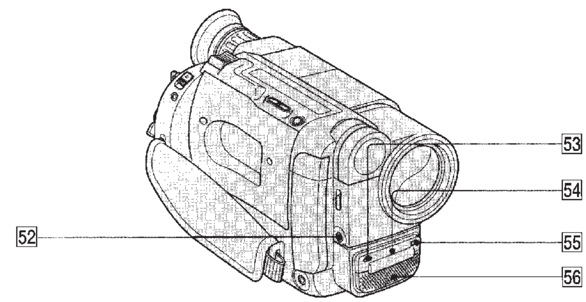
47 **RFU DC OUT (RFU adaptor DC output) jack** (p. 52)

48 **Viewfinder lens adjustment ring** (p. 12)

49 **LIGHT switch** (p. 49)

50 **VIDEO/AUDIO jacks** (p. 52)

51 🎧 **(earphone) jack** (p. 21)



52 **MIC jack (PLUG IN POWER)**
Connect an external microphone (not supplied). This jack also accepts a "plug-in-power" microphone.

53 **Camera recording/battery lamp** (p. 11)

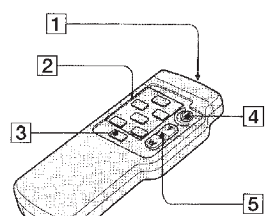
54 **LASER LINK emitter** (CCD-TRV43/TRV46 only) (p. 53)/**NightShot light emitter** (p. 33)

55 **Remote sensor** (p. 79)
Aim the Remote Commander here for remote control.

56 **Microphone**

Remote Commander

The buttons that have the same name on the Remote Commander as on the camcorder function identically.



1 **Transmitter**
Point toward the remote sensor to control the camcorder after turning on the camcorder.

2 **Video control buttons** (p. 20)

3 **DISPLAY button** (p. 21)

4 **START/STOP button** (p. 11)

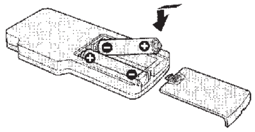
5 **Power zoom button** (p. 13)

Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor on the camcorder and the Remote Commander.
- This camcorder works in commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

To prepare the Remote Commander

Insert two size AA (R6) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.

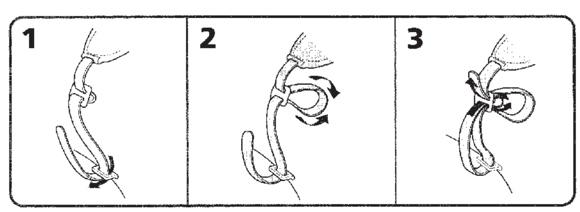


Note on battery life
The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or dead, the Remote Commander does not work.

To avoid damage from possible battery leakage
Remove the batteries when you will not use the Remote Commander for a long time.

Attaching the shoulder strap

Attach the supplied shoulder strap to the hooks for the shoulder strap .



To watch the demonstration

You can start the demonstration by setting DEMO MODE in the menu system.
You can also start the demonstration by the following operation.
When NIGHTSHOT is set to ON, you cannot watch the demonstration.

To enter demo mode

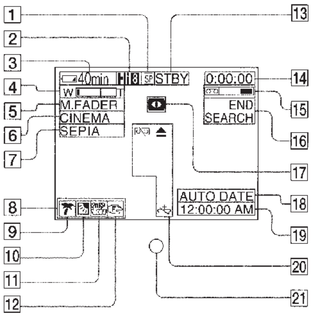
(1) Eject the cassette and set the POWER switch to PLAYER.
(2) Turn STANDBY up to STANDBY.
(3) While holding down ▶ set the POWER switch to CAMERA.

To exit demo mode

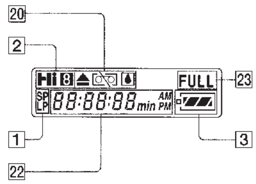
(1) Set the POWER switch to PLAYER.
(2) Turn STANDBY up to STANDBY.
(3) While holding down ■ set the POWER switch to CAMERA.

Operation indicators

Viewfinder



Display window



1 **Recording mode indicator** (p. 28)/ **Mirror mode indicator** (p. 16)

2 **Playing back or recording in Hi8 format** (p. 59)

3 **Remaining battery time indicator**

4 **Exposure indicator** (p. 42)/ **Zoom indicator** (p. 13)

5 **FADER indicator** (p. 32)

6 **Wide mode indicator** (p. 35)

7 **PICTURE EFFECT indicator** (p. 41)

8 **LCD BRIGHT indicator** (p. 15) / **VOLUME indicator** (p. 20)

9 **PROGRAM AE indicator** (p. 36)

10 **Backlight indicator** (p. 30)

11 **Steadyshot off indicator** (CCD-TRV43/TRV46 only) (p. 51)

12 **Manual focusing** (p. 39)

13 **Standby/Recording mode indicator** (p. 11) /**Video control mode indicator** (p. 22)

14 **Tape counter** (p. 12)/**Self-diagnosis functions indicator** (p. 72)/**5SEC mode indicator** (p. 14)

15 **Remaining tape indicator**

16 **END SEARCH indicator** (p. 23)

17 **NIGHTSHOT indicator** (p. 33)

18 **AUTO DATE indicator** (p. 11)/**Date indicator** (p. 47)

19 **Time indicator** (p. 47)

20 **Warning indicators** (p. 82)

21 **Recording lamp** (p. 11)

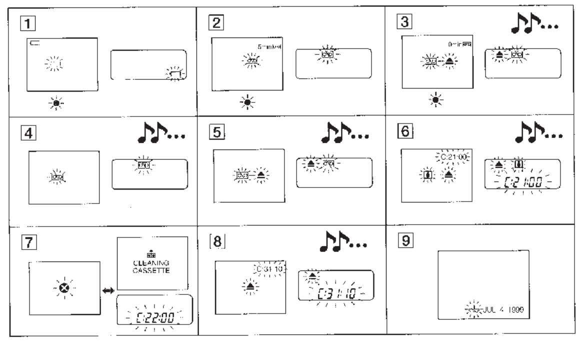
22 **Date or time indicator** (p. 47)/**Tape counter** (p. 12)/**Self-diagnosis functions indicator** (p. 72)/**Remaining battery time indicator**

23 **FULL charge indicator** (p. 7)

Warning indicators

If indicators flash in the viewfinder or in the display window, check the following:

♪♪... : you can hear the beep sound when the BEEP is set to ON.



1 **The battery is weak or dead.**
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

2 **The tape is near the end.**
The flashing is slow.

3 **The tape has run out.**
The flashing becomes rapid.

4 **No tape has been inserted.**

5 **The tab on the tape is out (red).**

6 **Moisture condensation has occurred.**

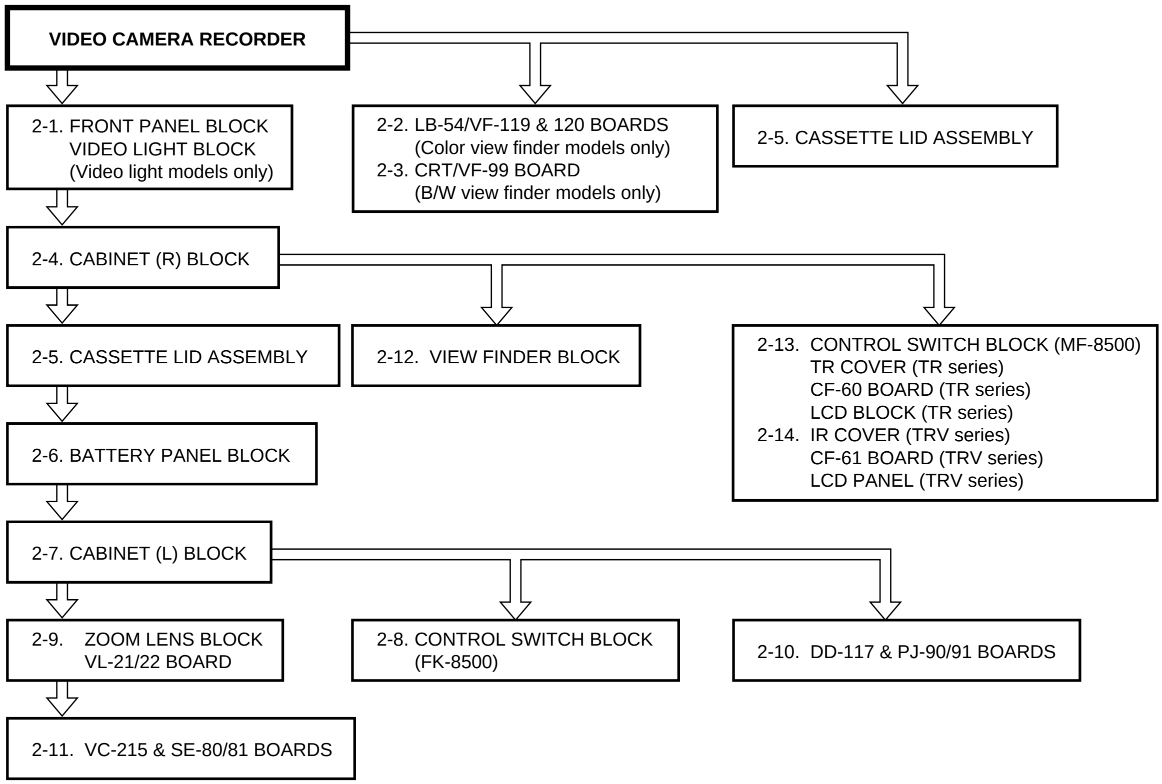
7 **The video heads may be contaminated.**

8 **Some other trouble has occurred.**
Use the self-diagnosis function (p. 72).
If the display does not disappear, contact your Sony dealer or local authorized Sony service facility.

9 **The lithium battery is weak or is not installed.**

SECTION 2
DISASSEMBLY

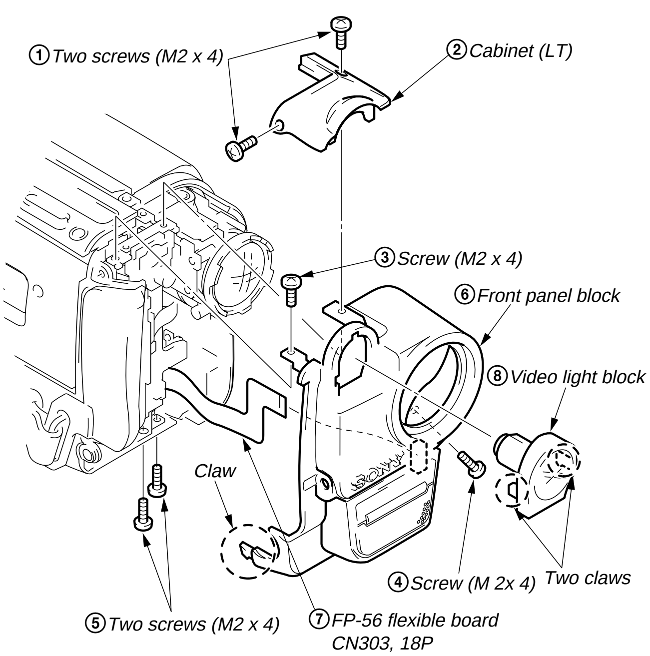
The equipment can be removed using the following procedure.



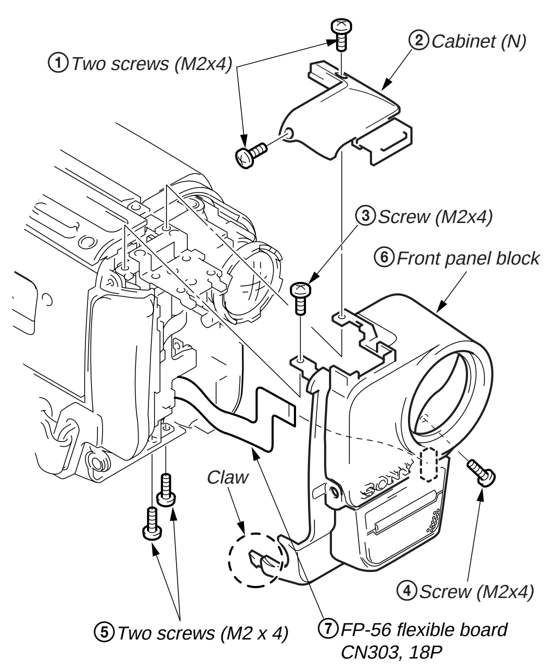
NOTE : Follow the disassembly procedure in the numerical order given.

2-1. REMOVAL OF FRONT PANEL BLOCK AND VIDEO LIGHT BLOCK

—Video light models—
CCD-TR516/TR516PK/TR716
CCD-TRV36/TRV36PK/TRV43/TRV46/TRV46PK

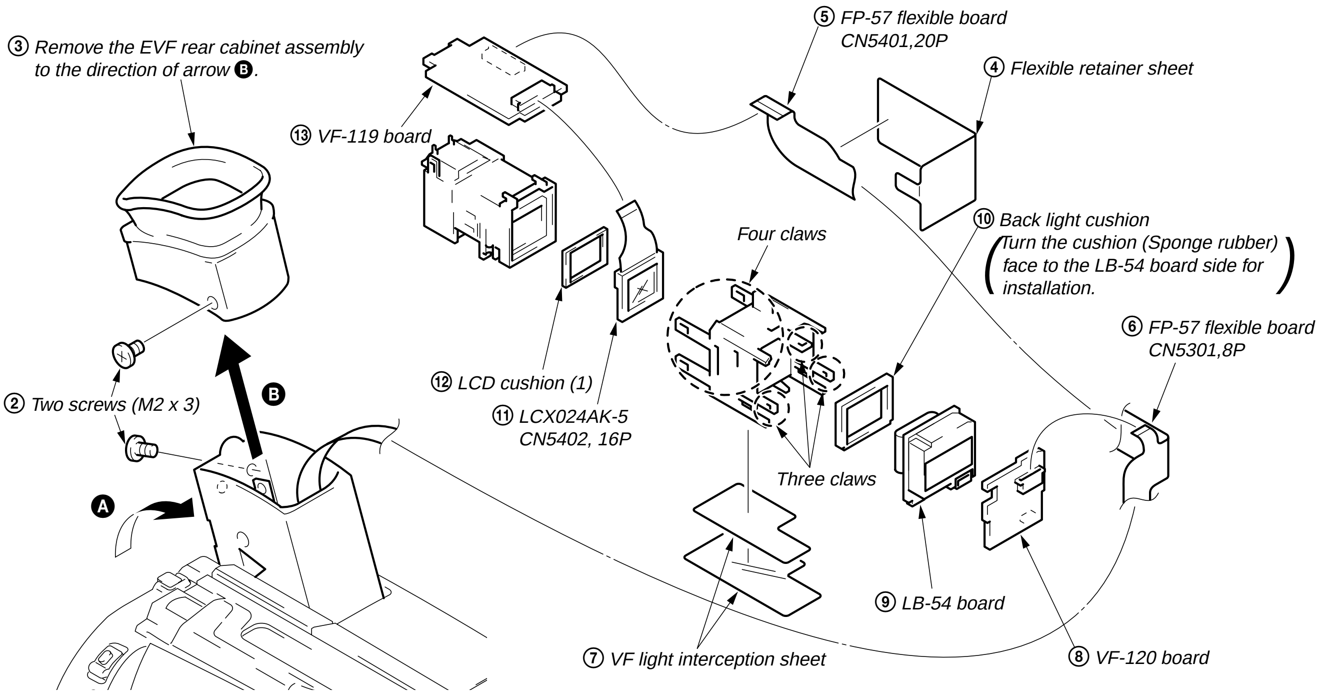


—No video light models—
CCD-TR315/TR416/TR416PK
CCD-TRV16/TRV16PK



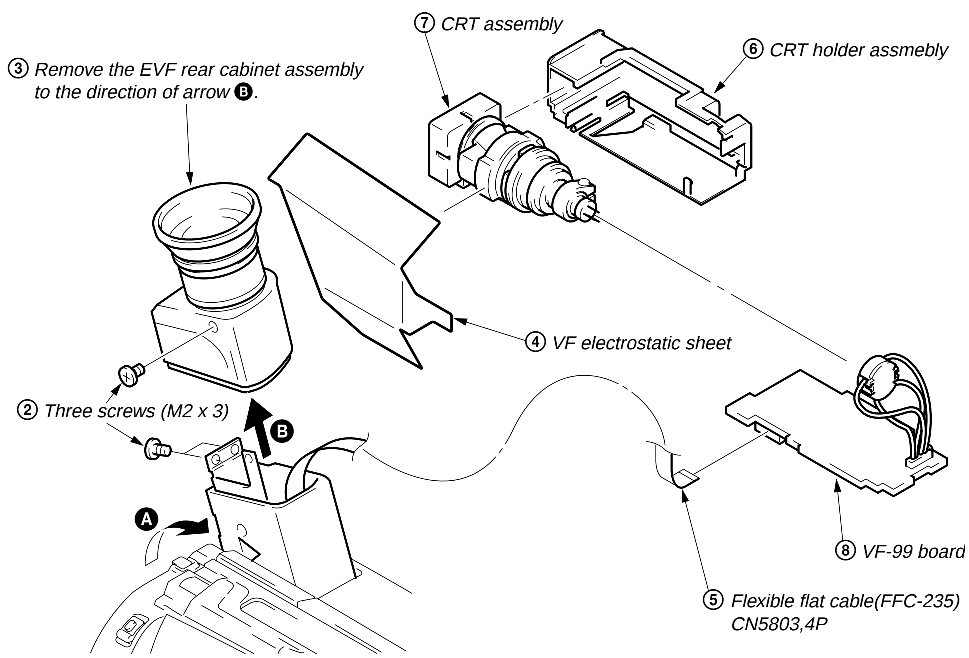
2-2. REMOVAL OF LB-54, VF-119 AND VF-120 BOARDS
(Color view finder model CCD-TR416/TR416PK/TR516/TR516PK/TR716)

① *Tilt-up the EVF block to the direction of arrow* Ⓐ.



2-3. REMOVAL OF VF-99 AND CRT ASSEMBLY
(B/W view finder model CCD-TR315 and TRV series)

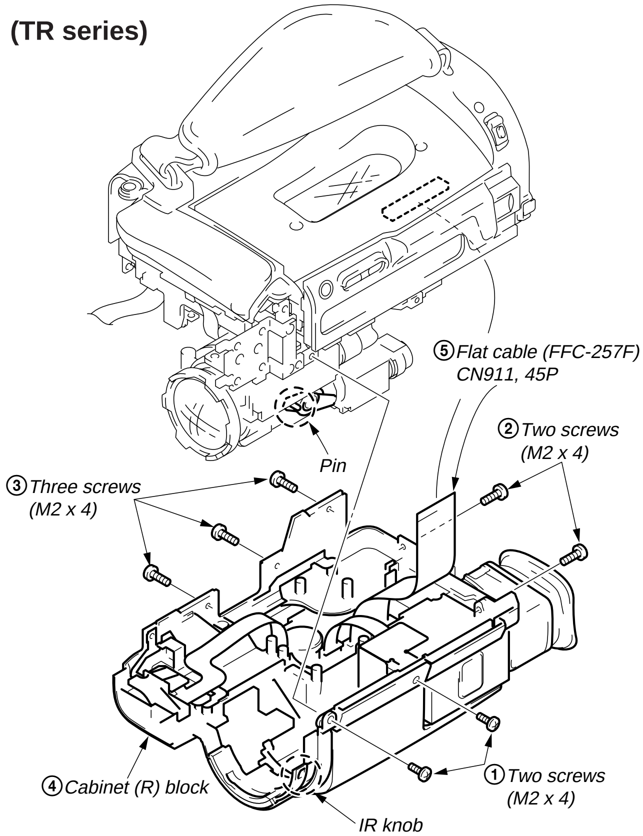
① *Tilt-up the EVF block to the direction of arrow* Ⓐ.



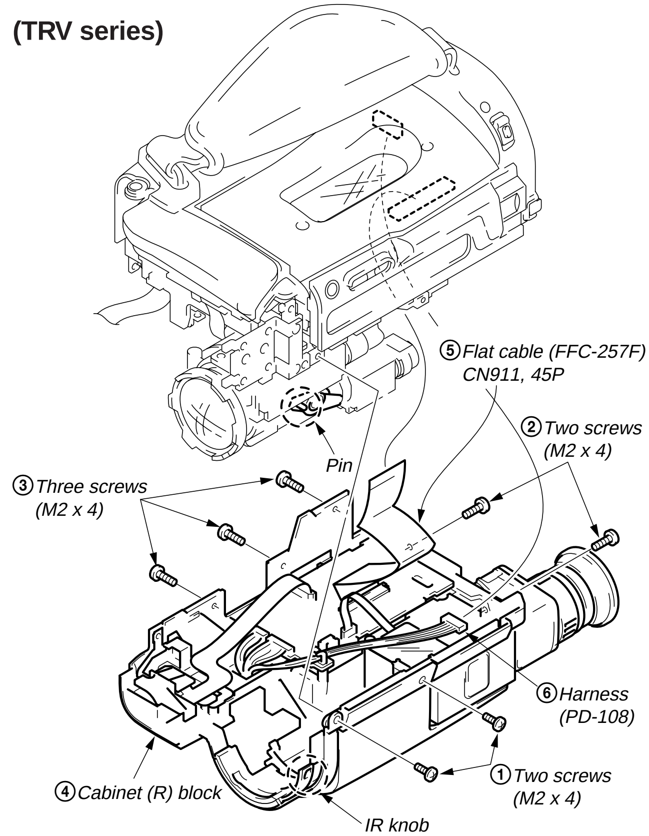
2-4. REMOVAL OF CABINET (R) BLOCK

Note : *Be sure to that the pin of the Lens assembly is put into the hole of the IR knob when attaching.*

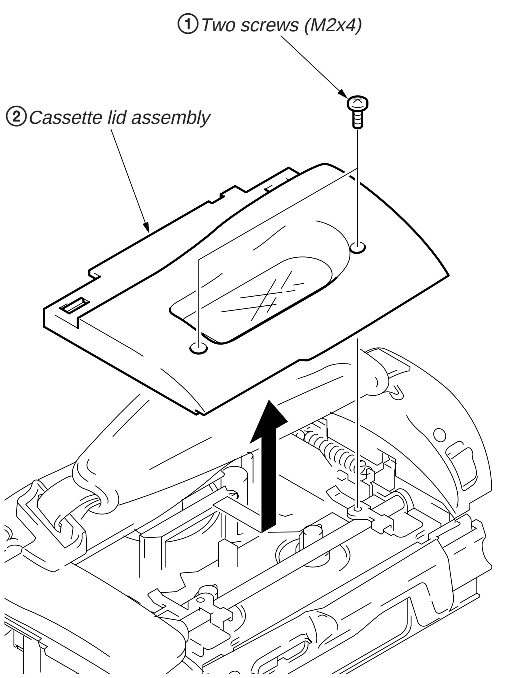
(TR series)



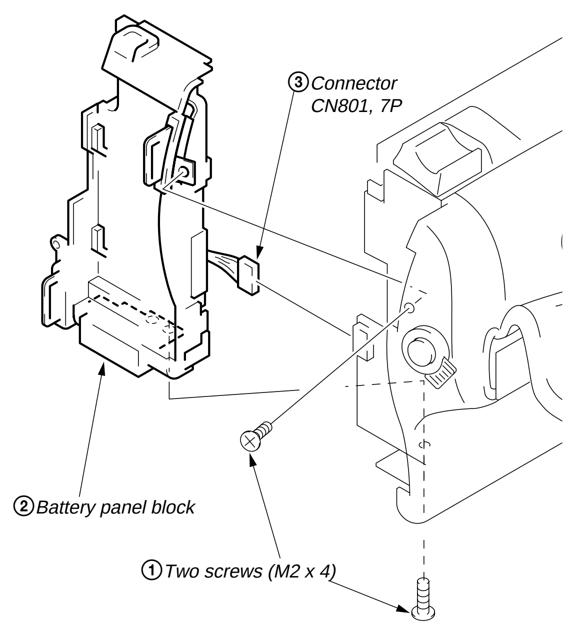
(TRV series)



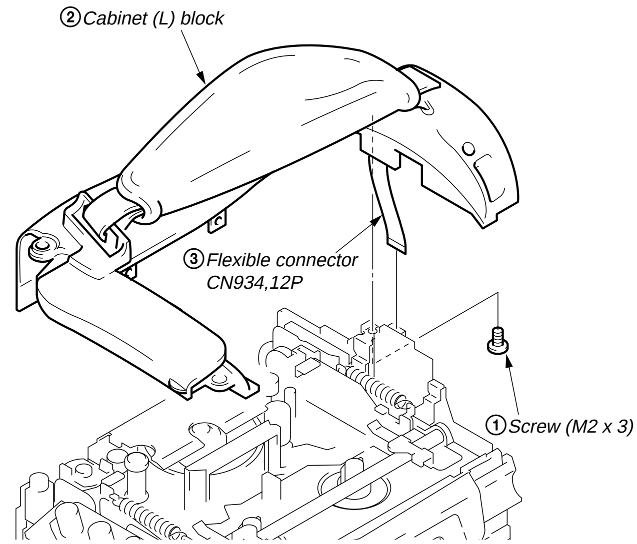
2-5. REMOVAL OF CASSETTE LID ASSEMBLY



2-6. REMOVAL OF BATTERY PANEL BLOCK

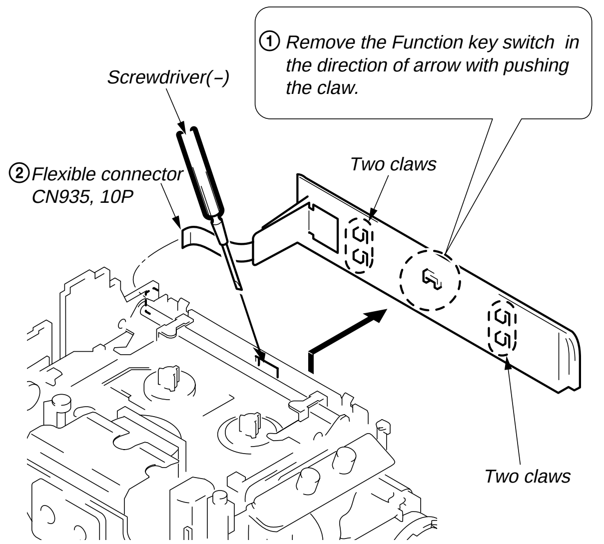


2-7. REMOVAL OF CABINET (L) BLOCK



2-8. REMOVAL OF CONTROL SWITCH BLOCK

Function Key Switch (FK-8500)



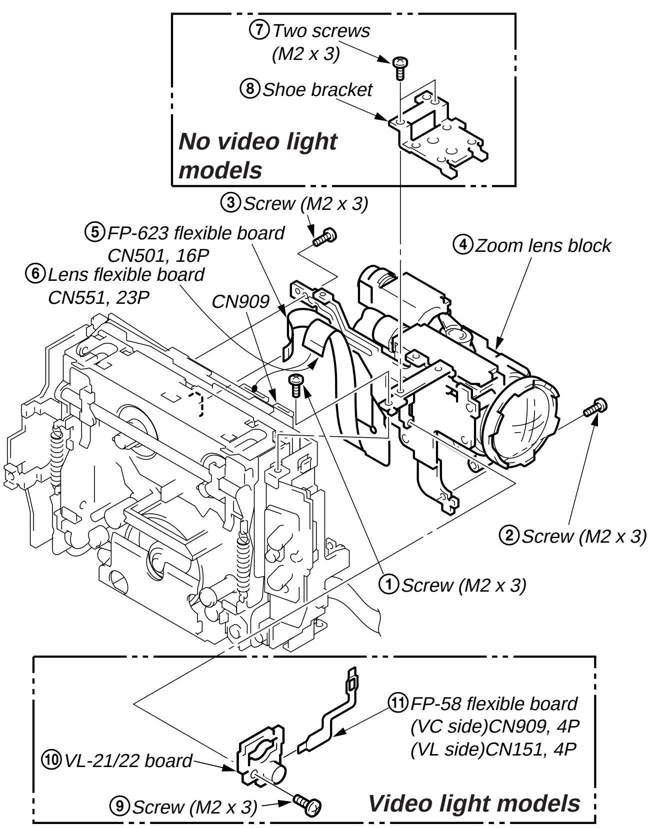
2-9. REMOVAL OF ZOOM LENS BLOCK AND VL-21/22 BOARD

—Video light models—

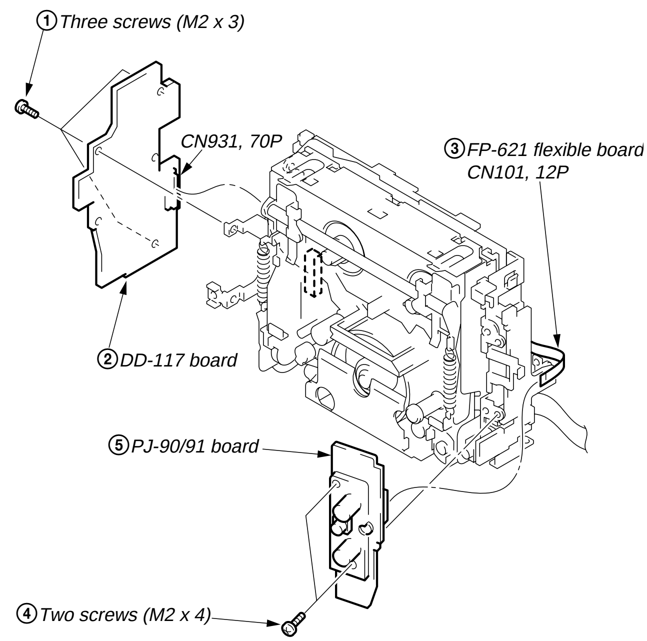
CCD-TR516/TR516PK/TR716
CCD-TRV36/TRV36PK/TRV43/TRV46/TRV46PK

—No video light models—

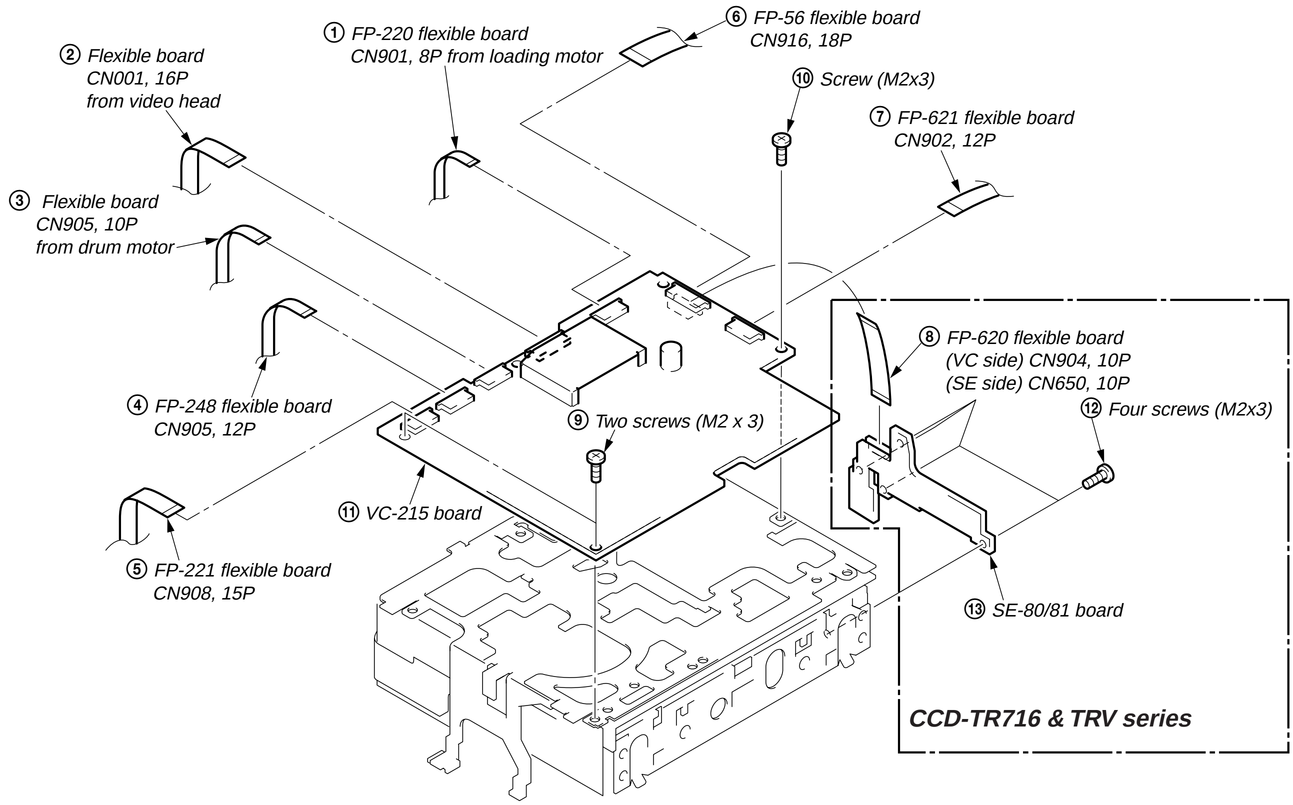
CCD-TR315/TR416/TR416PK
CCD-TRV16/TRV16PK



2-10. REMOVAL OF DD-117 AND PJ-90/91 BOARDS



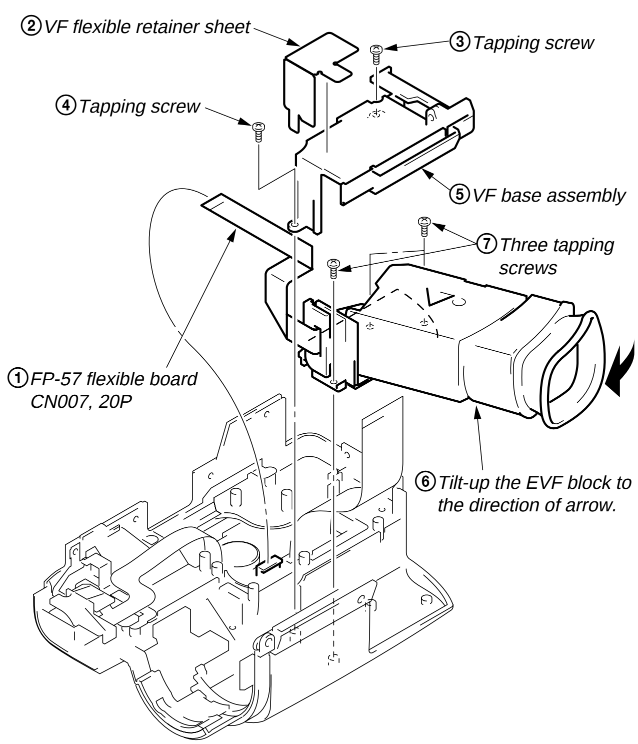
2-11. REMOVAL OF VC-215 AND SE-80/81 BOARDS



2-12. REMOVAL OF VIEW FINDER BLOCK

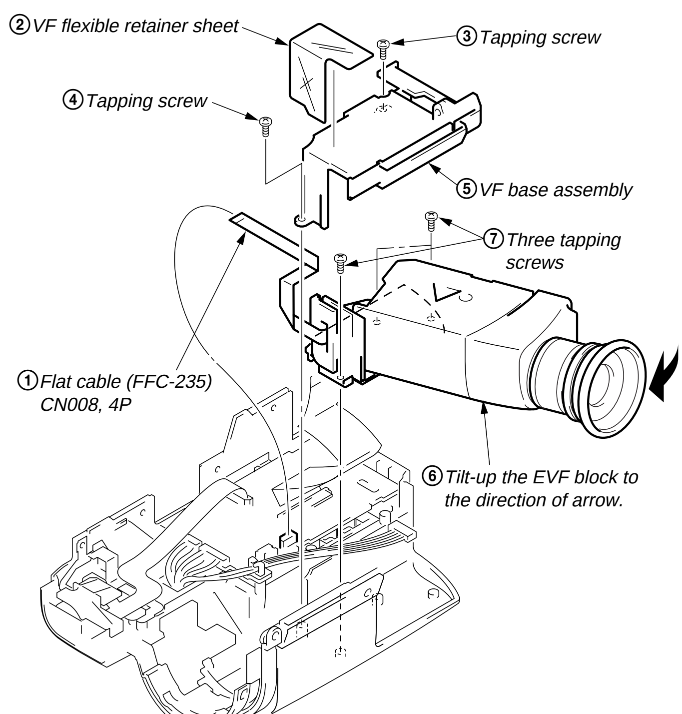
—Color view finder—

CCD-TR416/TR416PK/TR516/TR516PK/TR716

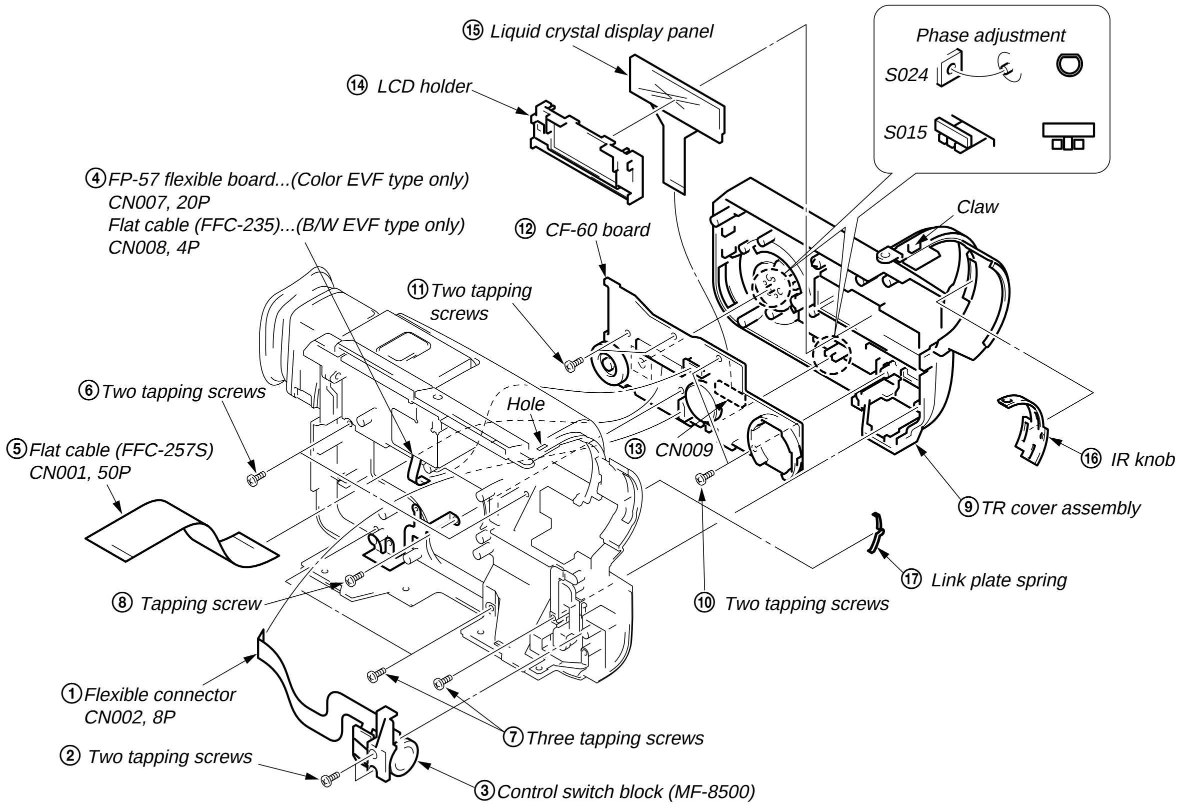


—B/W view finder—

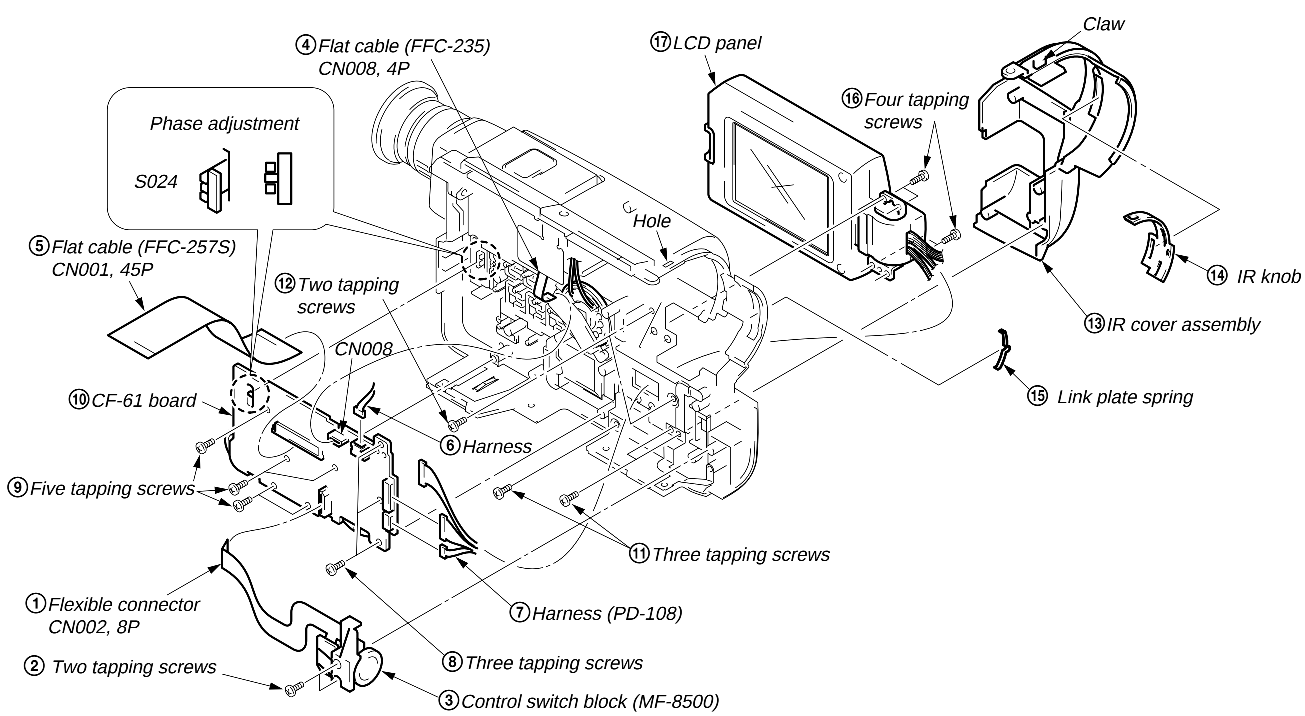
CCD-TR315 and TRV series



2-13. REMOVAL OF TR COVER, CF-60 BOARD AND DISPLAY PANEL ...(TR series)



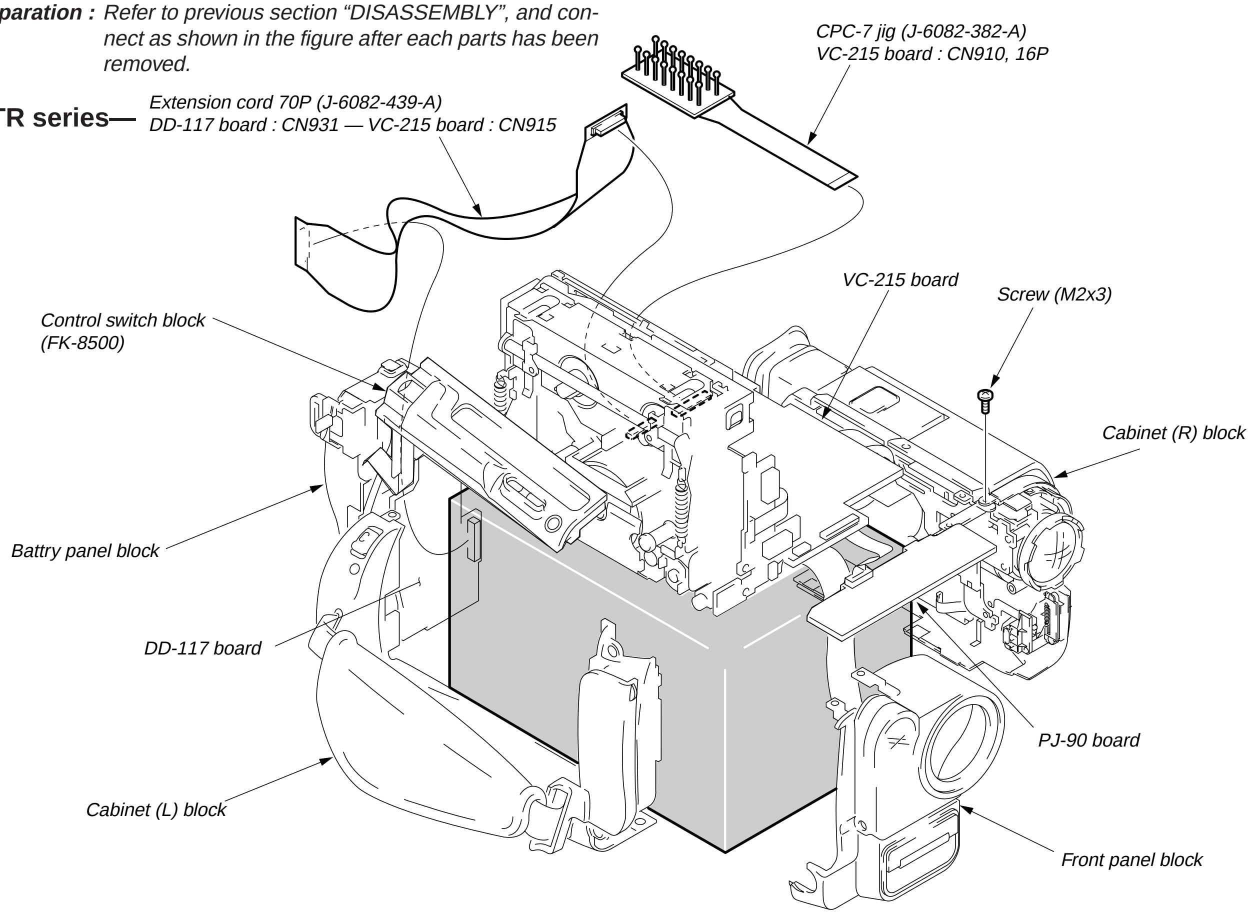
2-14. REMOVAL OF IR COVER, CF-61 BOARD AND LCD PANEL...(TRV series)



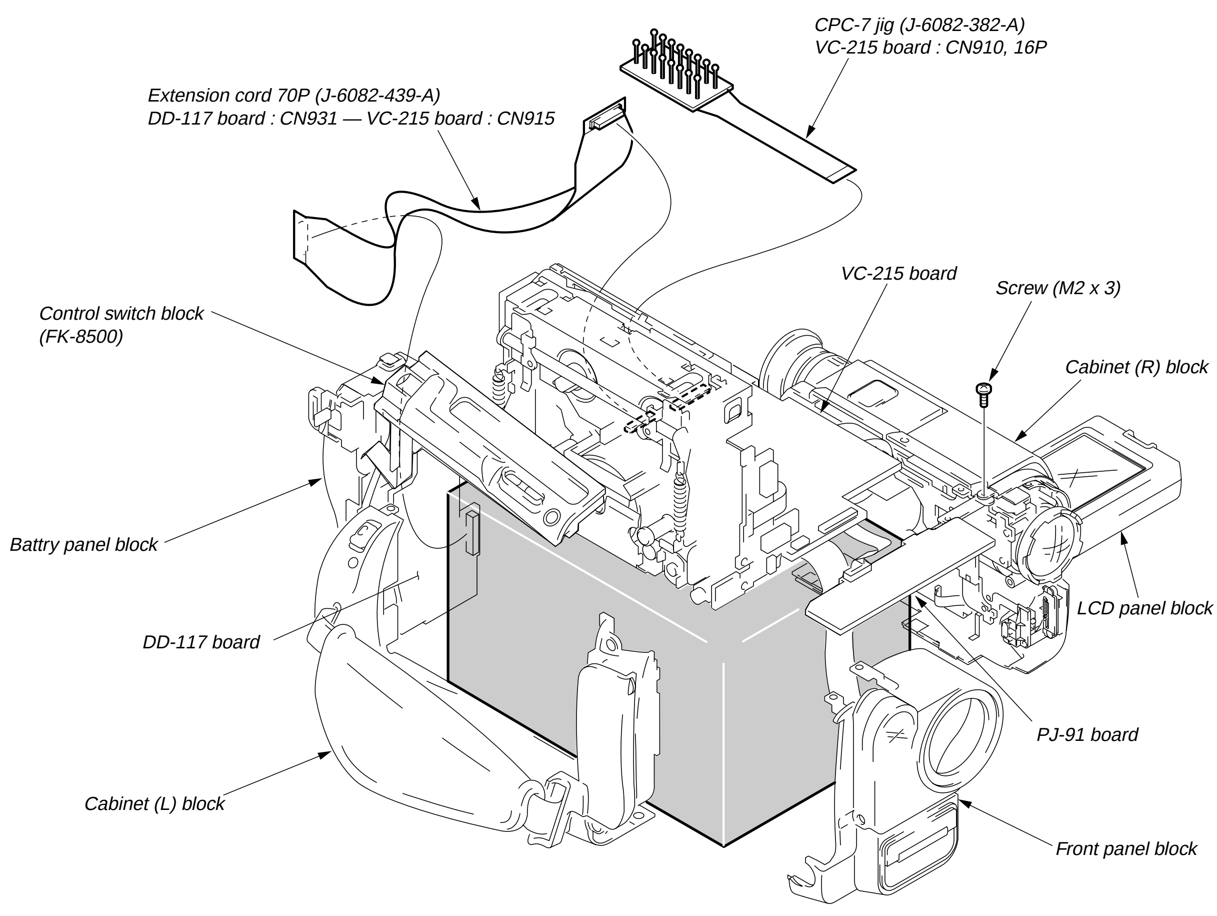
2-15. SERVICE POSITION

Preparation : *Refer to previous section “DISASSEMBLY”, and connect as shown in the figure after each parts has been removed.*

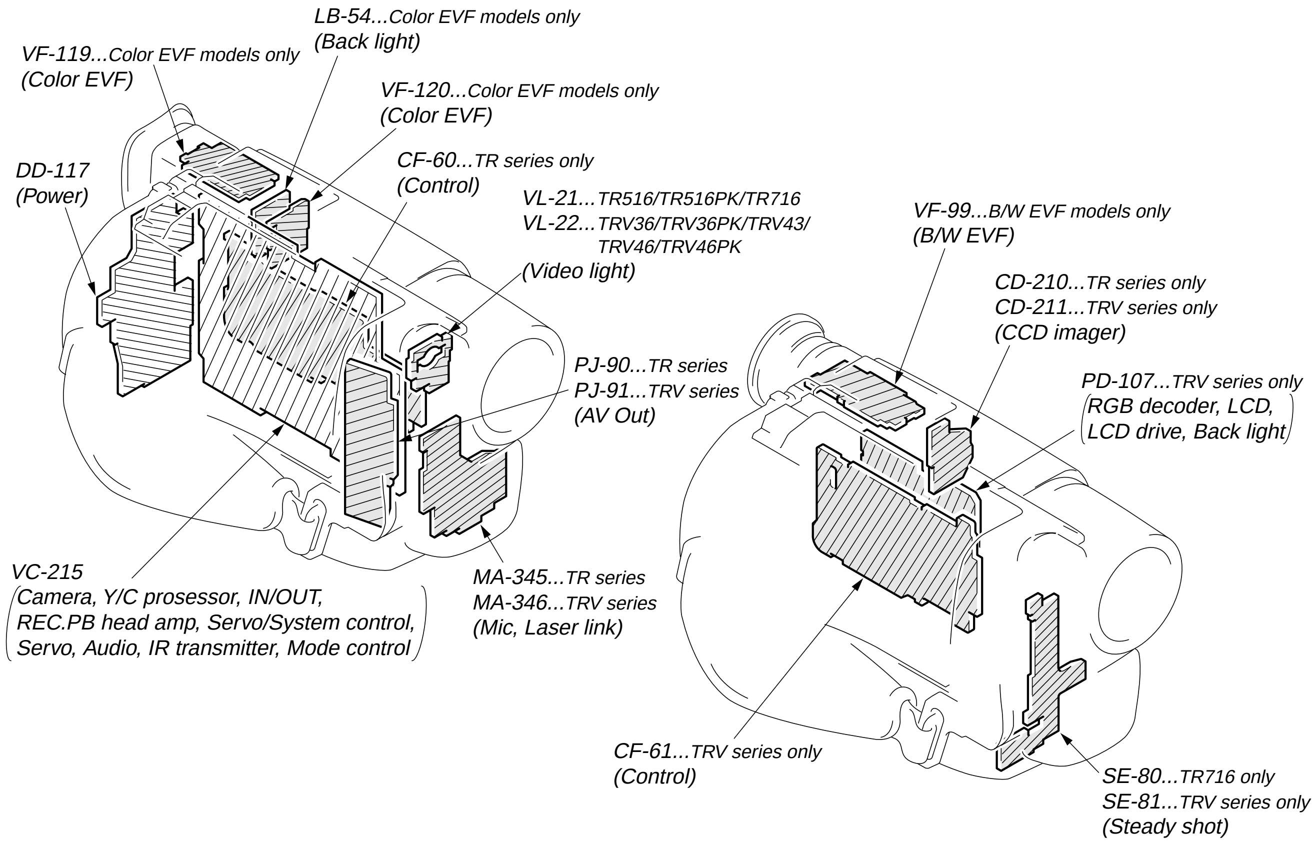
—TR series—



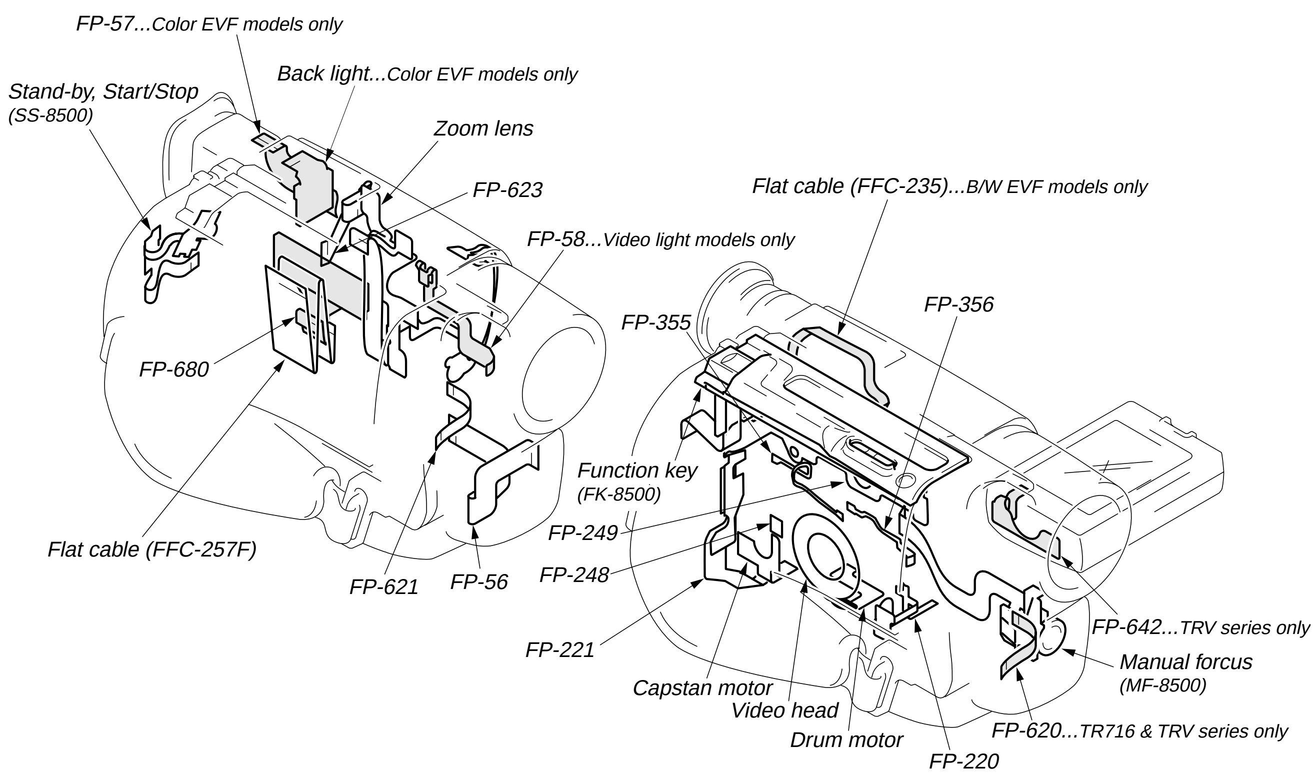
—TRV series—

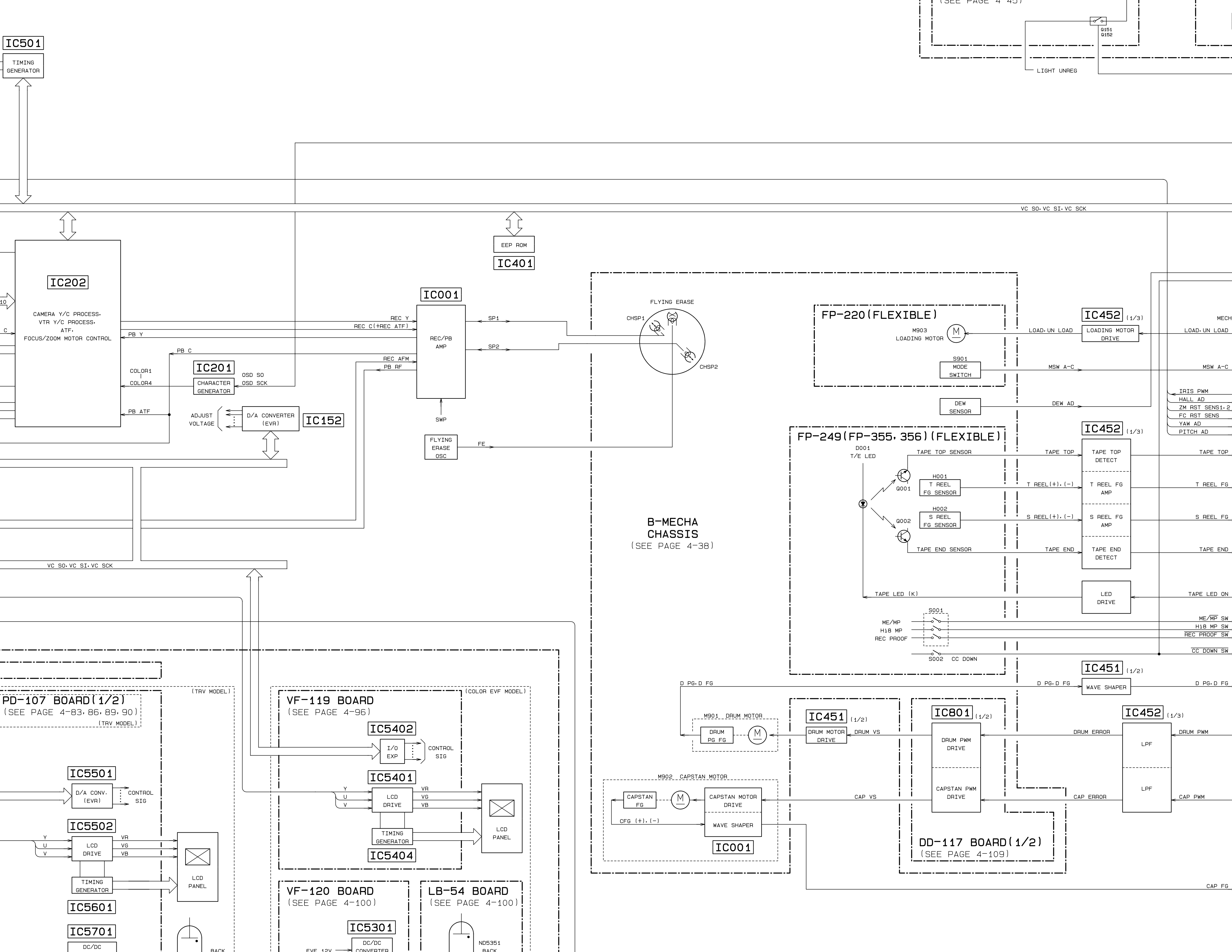


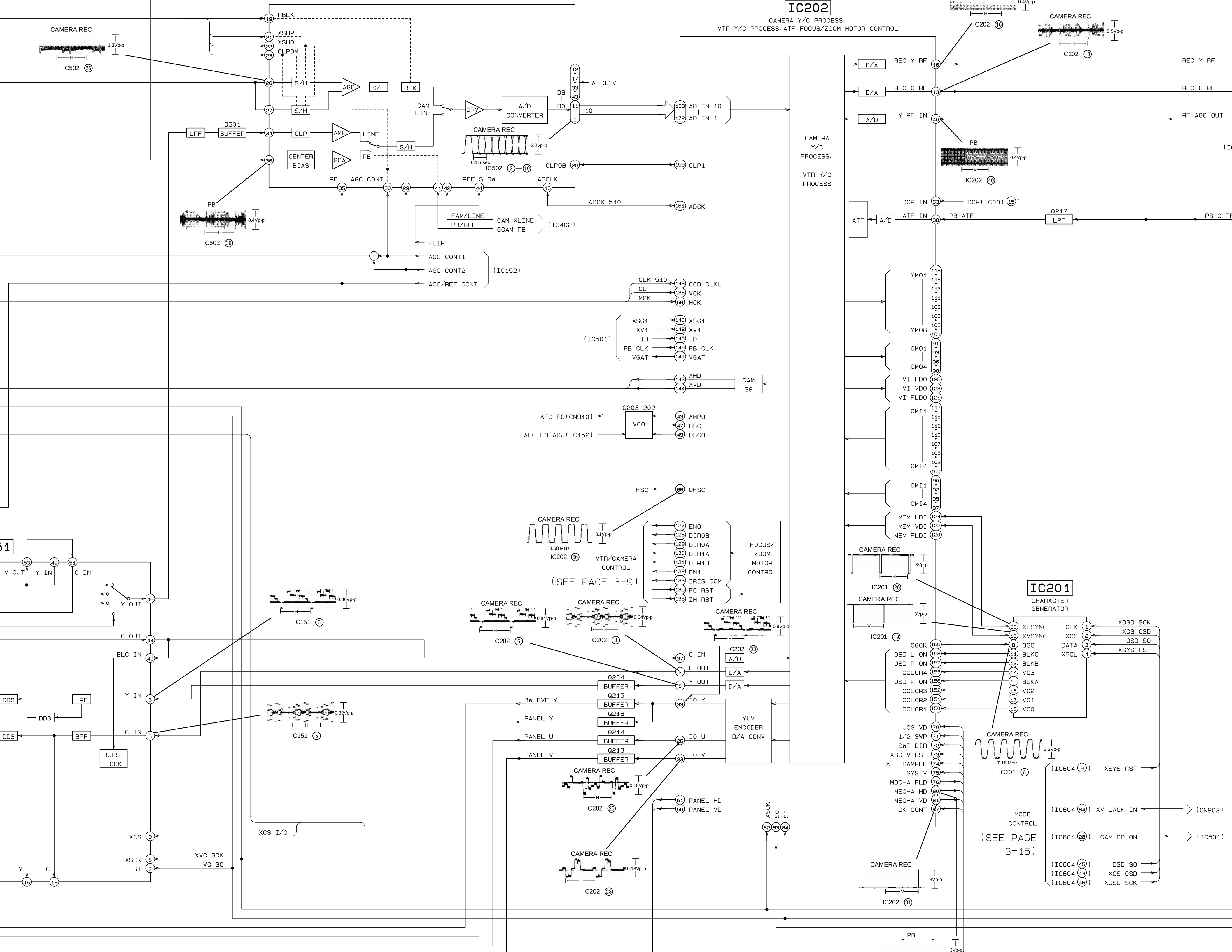
2-16. CIRCUIT BOARDS LOCATION



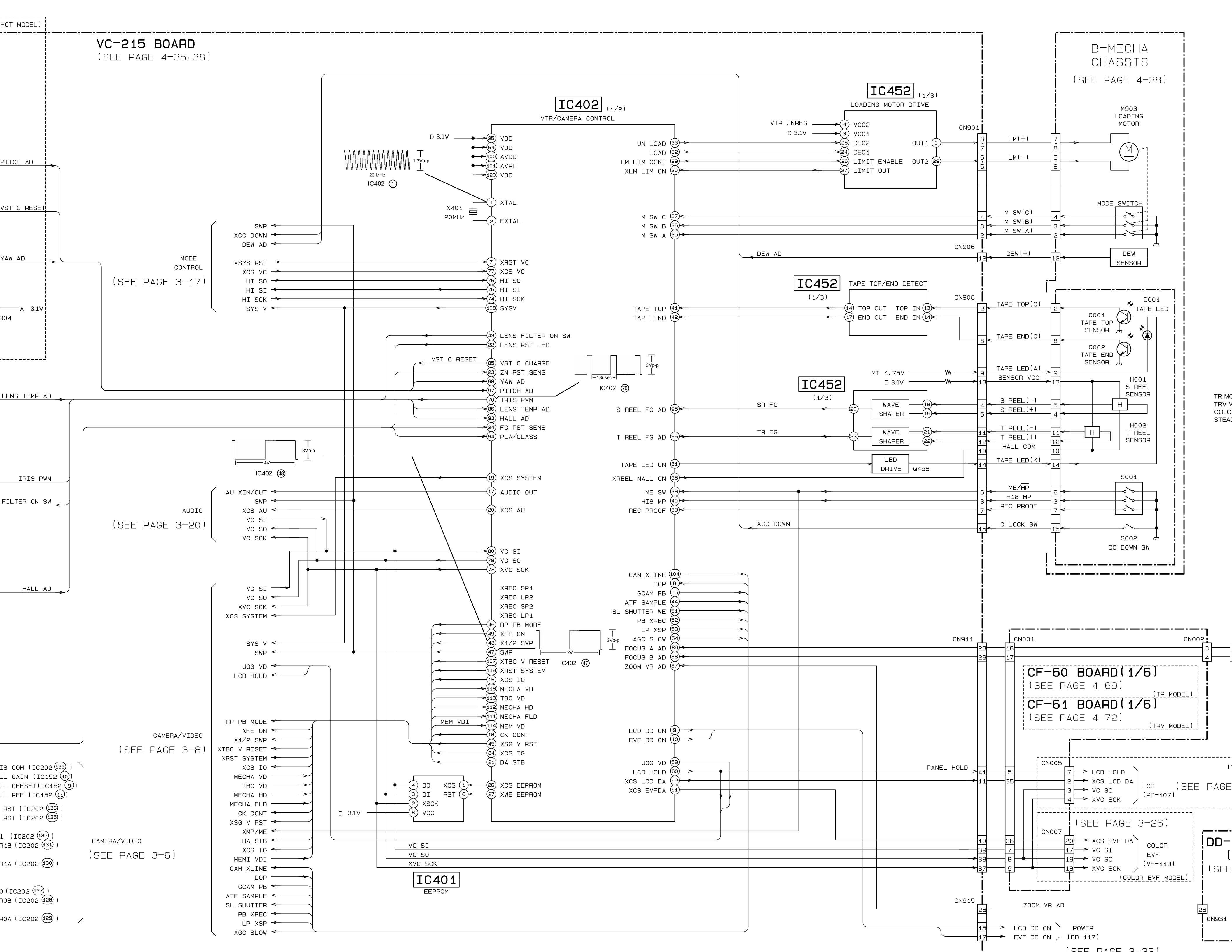
2-17. FLEXIBLE BOARDS AND FLAT CABLES LOCATION



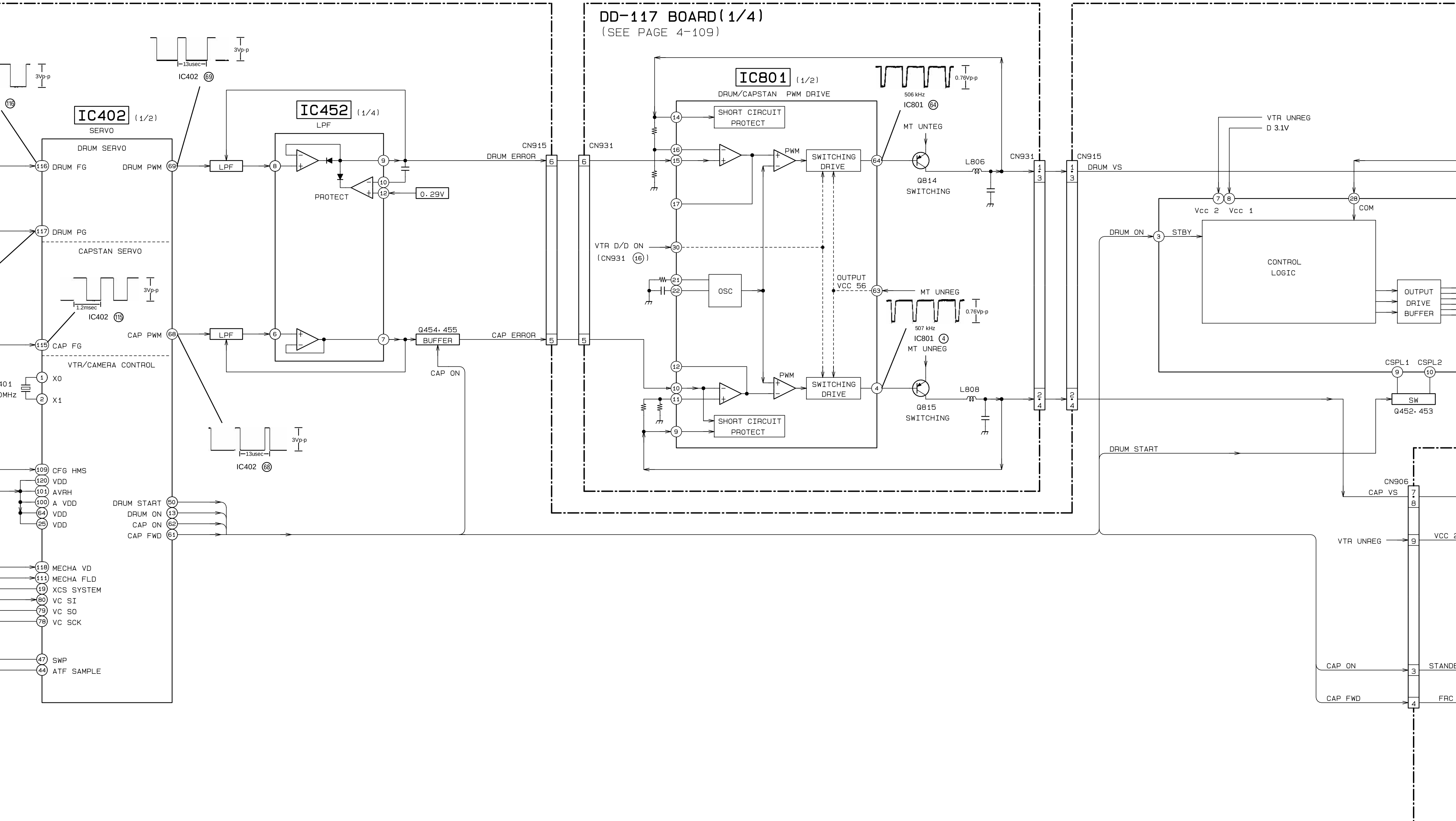

IC501
TIMING GENERATOR
IC202
CAMERA Y/C PROCESS, VTR Y/C PROCESS, ATF, FOCUS/ZOOM MOTOR CONTROL
IC201
CHARACTER GENERATOR
OSD SO
OSD SCK
COLOR1
COLOR4
PB Y
PB C
PB ATF
IC152
D/A CONVERTER (EVR)
ADJUST VOLTAGE
EEP ROM
IC401
IC001
REC/PB AMP
REC Y
REC C(+REC ATF)
REC AFM
PB RF
SP1
SP2
SWP
FLYING ERASE OSC
FE
FLYING ERASE
CHSP1
CHSP2
VC SO, VC SI, VC SCK
B-MECHA CHASSIS
(SEE PAGE 4-38)
FP-220(FLEXIBLE)
M903 LOADING MOTOR
S901 MODE SWITCH
DEW SENSOR
FP-249(FP-355, 356)(FLEXIBLE)
D001 T/E LED
TAPE TOP SENSOR
H001 T REEL FG SENSOR
H002 S REEL FG SENSOR
Q001
Q002
TAPE END SENSOR
TAPE LED (K)
S001
ME/MP
Hi8 MP
REC PROOF
S002 CC DOWN
IC452 (1/3)
LOADING MOTOR DRIVE
LOAD, UN LOAD
MSW A-C
DEW AD
TAPE TOP DETECT
T REEL FG AMP
S REEL FG AMP
TAPE END DETECT
TAPE TOP
T REEL(+), (-)
S REEL(+), (-)
TAPE END
LED DRIVE
TAPE LED ON
ME/MP SW
Hi8 MP SW
REC PROOF SW
CC DOWN SW
MECH
IRIS PWM
HALL AD
ZM RST SENS1, 2
FC RST SENS
YAW AD
PITCH AD
T REEL FG
S REEL FG
IC451 (1/2)
WAVE SHAPER
D PG, D FG
M901 DRUM MOTOR
DRUM PG FG
DRUM MOTOR DRIVE
DRUM VS
IC801 (1/2)
DRUM PWM DRIVE
CAPSTAN PWM DRIVE
DRUM ERROR
CAP ERROR
LPF
DRUM PWM
CAP PWM
M902 CAPSTAN MOTOR
CAPSTAN FG
CAPSTAN MOTOR DRIVE
WAVE SHAPER
CFG (+), (-)
CAP VS
CAP FG
DD-117 BOARD(1/2)
(SEE PAGE 4-109)
PD-107 BOARD(1/2)
(SEE PAGE 4-83, 86, 89, 90)
(TRV MODEL)
IC5501
D/A CONV. (EVR)
CONTROL SIG
IC5502
LCD DRIVE
Y U V
VR VG VB
TIMING GENERATOR
IC5601
IC5701
DC/DC
LCD PANEL
BACK
VF-119 BOARD
(SEE PAGE 4-96)
(COLOR EVF MODEL)
IC5402
I/O EXP
IC5401
IC5404
VF-120 BOARD
(SEE PAGE 4-100)
IC5301
DC/DC CONVERTER
EVF 12V
LB-54 BOARD
(SEE PAGE 4-100)
ND5351 BACK
Q151 Q152
LIGHT UNREG
(SEE PAGE 4-45)



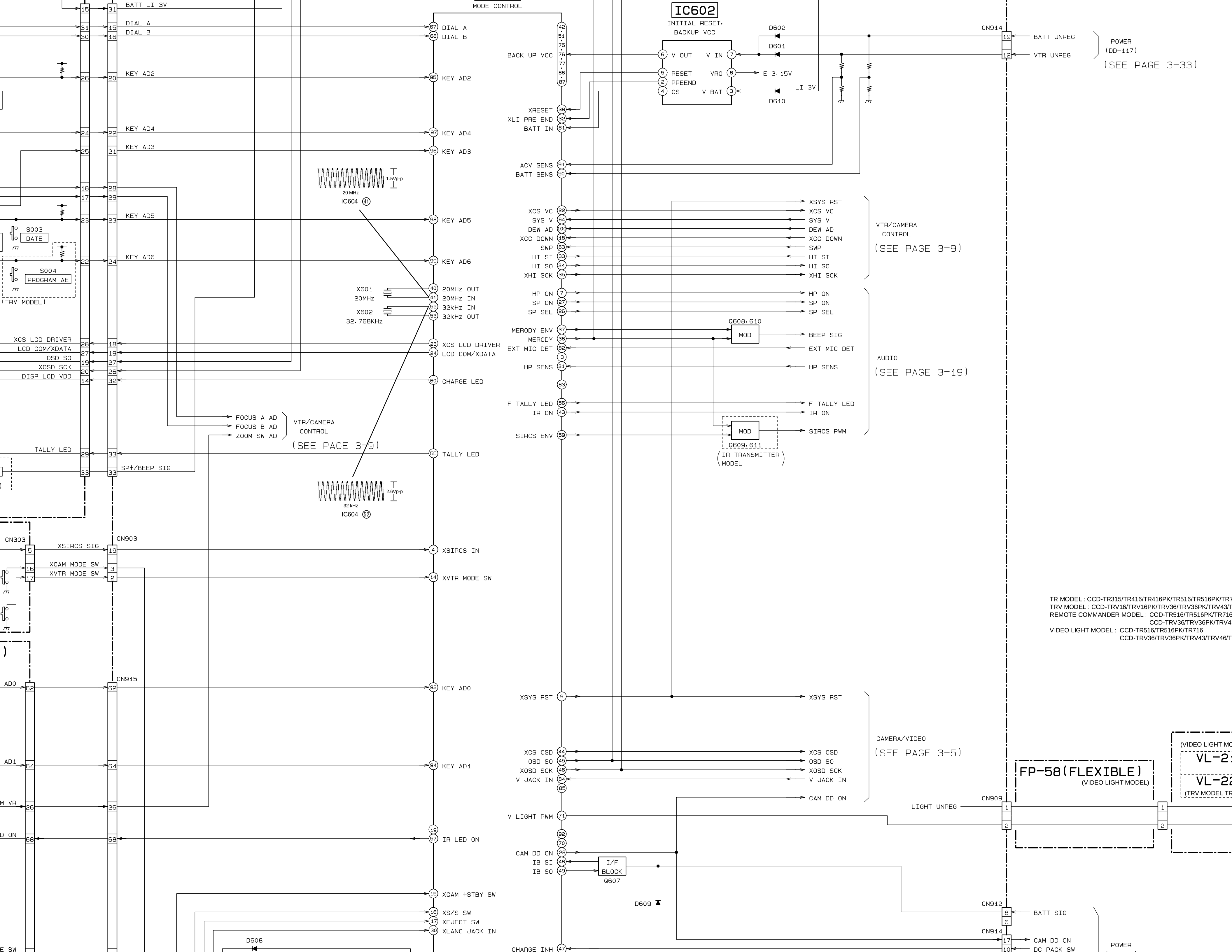
IC202
CAMERA Y/C PROCESS,
VTR Y/C PROCESS, ATF, FOCUS/ZOOM MOTOR CONTROL
CAMERA Y/C PROCESS, VTR Y/C PROCESS
IC201
CHARACTER GENERATOR
A/D CONVERTER
DRV
AGC
S/H
BLK
CLP
AMP
GCA
CENTER BIAS
LPF
Q501 BUFFER
PBLK
XSHP
XSHD
CLPDM
CAM LINE
LINE
PB
D9
D0
A 3.1V
AD IN 10
AD IN 1
CLPOB
CLP1
ADCLK
ADCK 510
ADCK
PB
AGC CONT
REF SLOW
FAM/LINE
PB/REC
CAM XLINE
GCAM PB
(IC402)
FLIP
AGC CONT1
AGC CONT2
ACC/REF CONT
(IC152)
CLK 510
CL
MCK
CCD CLKL
VCK
XSG1
XV1
ID
PB CLK
VGAT
(IC501)
AHD
AVD
CAM SG
Q203, 202
VCO
AFC FO(CN910)
AFC FO ADJ(IC152)
AMPO
OSCI
OSCO
FSC
OFSC
ENO
DIROB
DIROA
DIR1A
DIR1B
EN1
IRIS COM
FC RST
ZM RST
FOCUS/ ZOOM MOTOR CONTROL
VTR/CAMERA CONTROL
(SEE PAGE 3-9)
C IN
C OUT
Y OUT
IO Y
IO U
IO V
A/D
D/A
YUV ENCODER D/A CONV
Q204 BUFFER
Q215 BUFFER
Q216 BUFFER
Q214 BUFFER
Q213 BUFFER
BW EVF Y
PANEL Y
PANEL U
PANEL V
PANEL HD
PANEL VD
XSCK
SO
SI
REC Y RF
REC C RF
Y RF IN
RF AGC OUT
DOP IN
DOP(IC001 15)
ATF
ATF IN
PB ATF
Q217 LPF
PB C RF
YMO1
YMO8
CMO1
CMO4
VI HDO
VI VDO
VI FLDO
CMI1
CMI4
MEM HDI
MEM VDI
MEM FLDI
CGCK
OSD L ON
OSD R ON
COLOR4
OSD P ON
COLOR3
COLOR2
COLOR1
JOG VD
1/2 SWP
SWP DIR
XSG V RST
ATF SAMPLE
SYS V
MDCHA FLD
MECHA HD
MECHA VD
CK CONT
XHSYNC
XVSYNC
OSC
BLKC
BLKB
VC3
BLKA
VC2
VC1
VCO
CLK
XCS
DATA
XPCL
XOSD SCK
XCS OSD
OSD SO
XSYS RST
MODE CONTROL
(SEE PAGE 3-15)
(IC604 9) XSYS RST
(IC604 84) XV JACK IN (CN902)
(IC604 28) CAM DD ON (IC501)
(IC604 45) DSD SO
(IC604 44) XCS OSD
(IC604 46) XOSD SCK
V OUT
Y IN
C IN
Y OUT
C OUT
BLC IN
DDS
BPF
BURST LOCK
XCS
XCS I/O
XSCK
SI
XVC SCK
VC SO
CAMERA REC
1.3Vp-p
IC502 26
PB
0.4Vp-p
IC502 36
3.2Vp-p
0.14usec
IC502 2 — 10
IC202 16
0.5Vp-p
IC202 13
IC202 40
3Vp-p
IC201 20
IC201 19
3.58 MHz
3.1Vp-p
IC202 66
0.46Vp-p
IC151 3
0.32Vp-p
IC151 5
0.84Vp-p
IC202 6
0.34Vp-p
IC202 3
0.9Vp-p
IC202 33
0.18Vp-p
IC202 26
IC202 23
7.16 MHz
IC201 8
IC202 81

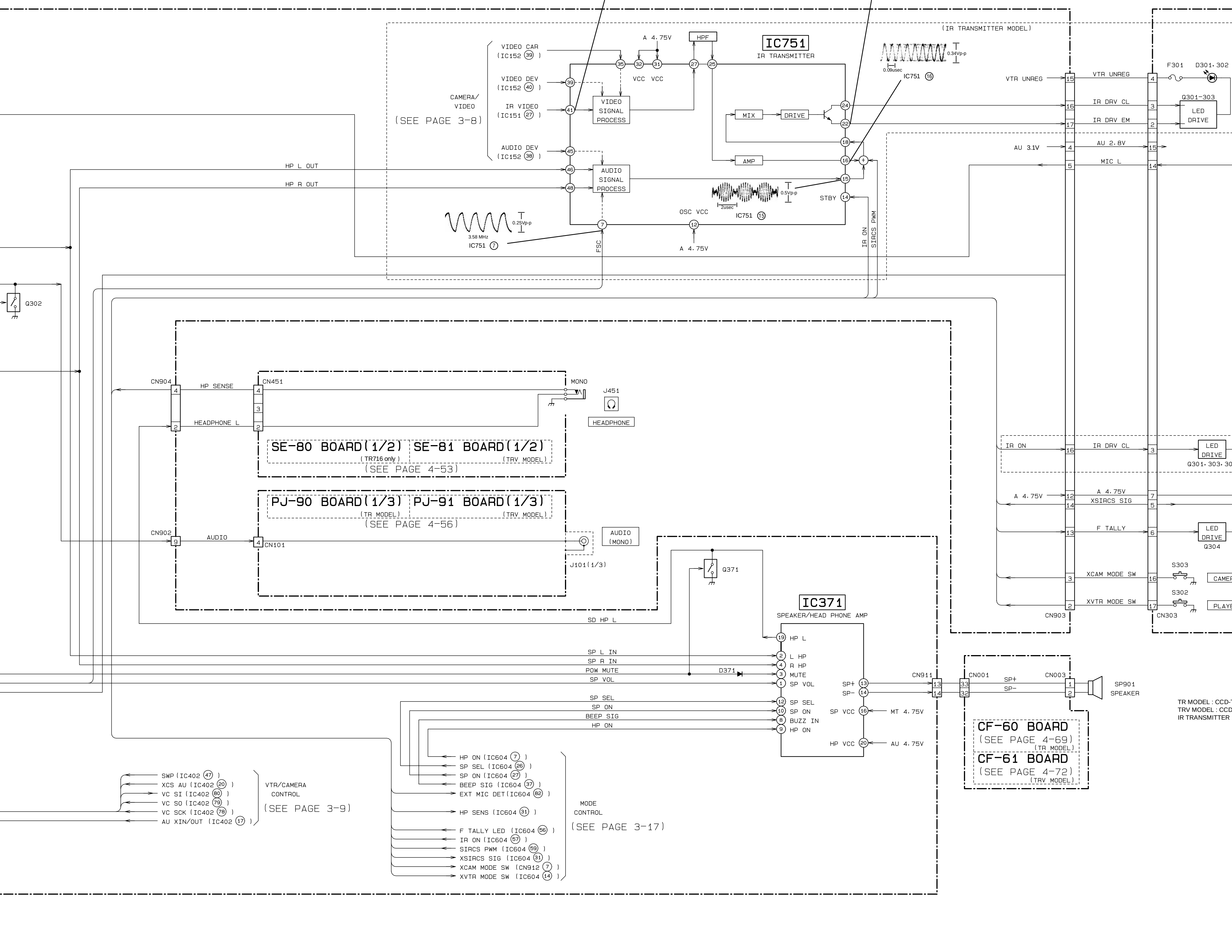


VC-215 BOARD
(SEE PAGE 4-35, 38)
B-MECHA CHASSIS
(SEE PAGE 4-38)
IC402 (1/2)
VTR/CAMERA CONTROL
IC452 (1/3)
LOADING MOTOR DRIVE
IC452 (1/3)
TAPE TOP/END DETECT
IC452 (1/3)
IC401
EEPROM
M903 LOADING MOTOR
MODE SWITCH
DEW SENSOR
D001 TAPE LED
Q001 TAPE TOP SENSOR
Q002 TAPE END SENSOR
H001 S REEL SENSOR
H002 T REEL SENSOR
S001
S002 CC DOWN SW
WAVE SHAPER
LED DRIVE
Q456
X401 20MHz
CN901
CN906
CN908
CN911
CN915
CN001
CN002
CN005
CN007
CN931
CF-60 BOARD (1/6)
(SEE PAGE 4-69)
(TR MODEL)
CF-61 BOARD (1/6)
(SEE PAGE 4-72)
(TRV MODEL)
LCD (PD-107)
(SEE PAGE 3-26)
COLOR EVF (VF-119)
(COLOR EVF MODEL)
POWER (DD-117)
MODE CONTROL
(SEE PAGE 3-17)
AUDIO
(SEE PAGE 3-20)
CAMERA/VIDEO
(SEE PAGE 3-8)
CAMERA/VIDEO
(SEE PAGE 3-6)

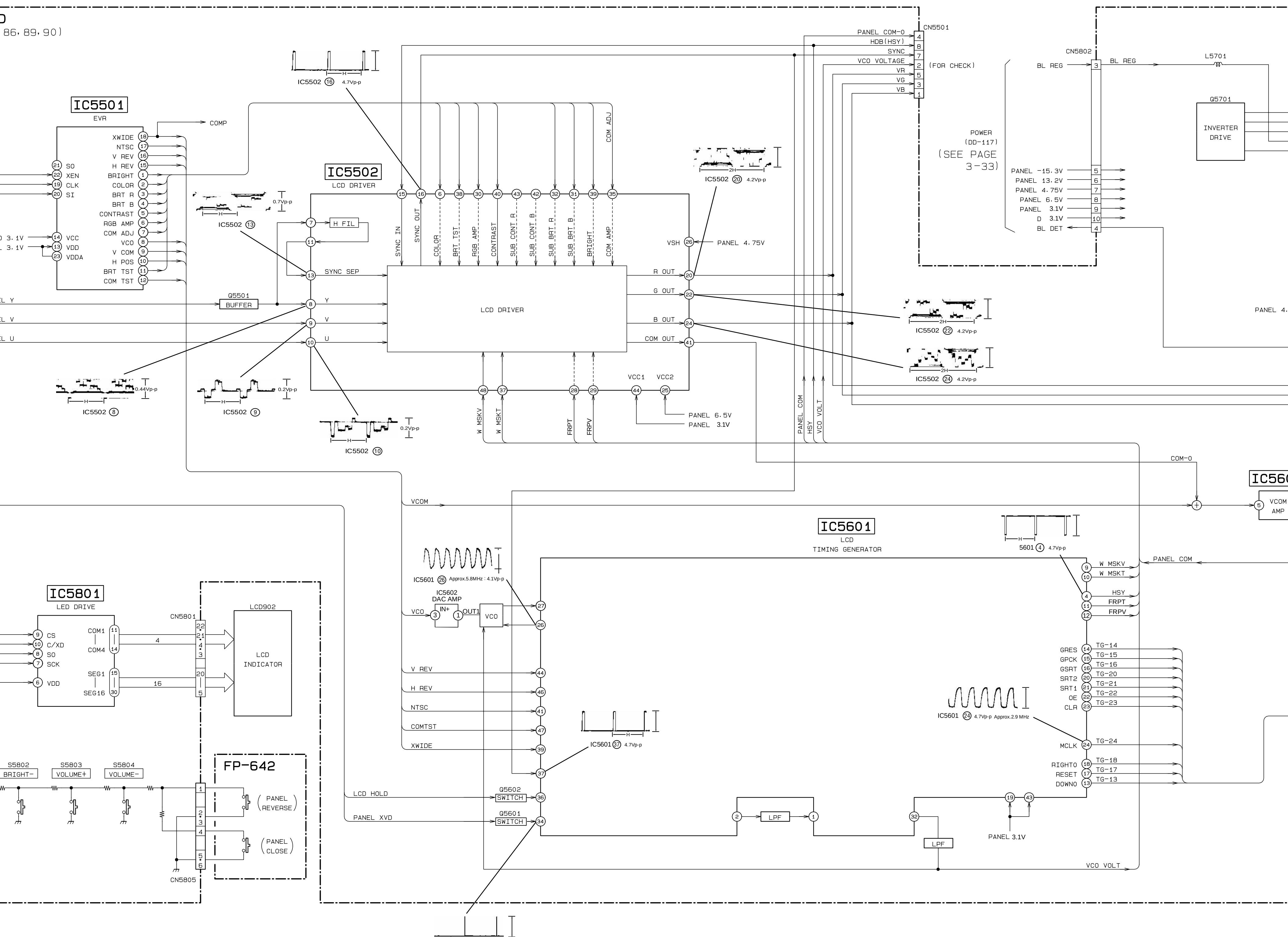


DD-117 BOARD(1/4)
(SEE PAGE 4-109)
IC402 (1/2)
SERVO
DRUM SERVO
DRUM FG
DRUM PWM
DRUM PG
CAPSTAN SERVO
CAP FG
CAP PWM
VTR/CAMERA CONTROL
X0
X1
CFG HMS
VDD
AVRH
A VDD
VDD
VDD
DRUM START
DRUM ON
CAP ON
CAP FWD
MECHA VD
MECHA FLD
XCS SYSTEM
VC SI
VC SO
VC SCK
SWP
ATF SAMPLE
IC402 (69)
IC402 (115)
IC402 (68)
3Vp-p
13usec
1.2msec
IC452 (1/4)
LPF
PROTECT
0.29V
Q454, 455
BUFFER
CAP ON
DRUM ERROR
CAP ERROR
CN915
CN931
IC801 (1/2)
DRUM/CAPSTAN PWM DRIVE
SHORT CIRCUIT PROTECT
PWM
SWITCHING DRIVE
OSC
VTR D/D ON
(CN931 (16))
OUTPUT VCC 56
MT UNTEG
MT UNREG
506 kHz
507 kHz
IC801 (64)
IC801 (4)
0.76Vp-p
Q814 SWITCHING
Q815 SWITCHING
L806
L808
DRUM VS
VTR UNREG
D 3.1V
Vcc 2
Vcc 1
COM
DRUM ON
STBY
CONTROL LOGIC
OUTPUT DRIVE BUFFER
CSPL1
CSPL2
SW
Q452, 453
DRUM START
CN906
CAP VS
VTR UNREG
CAP ON
CAP FWD

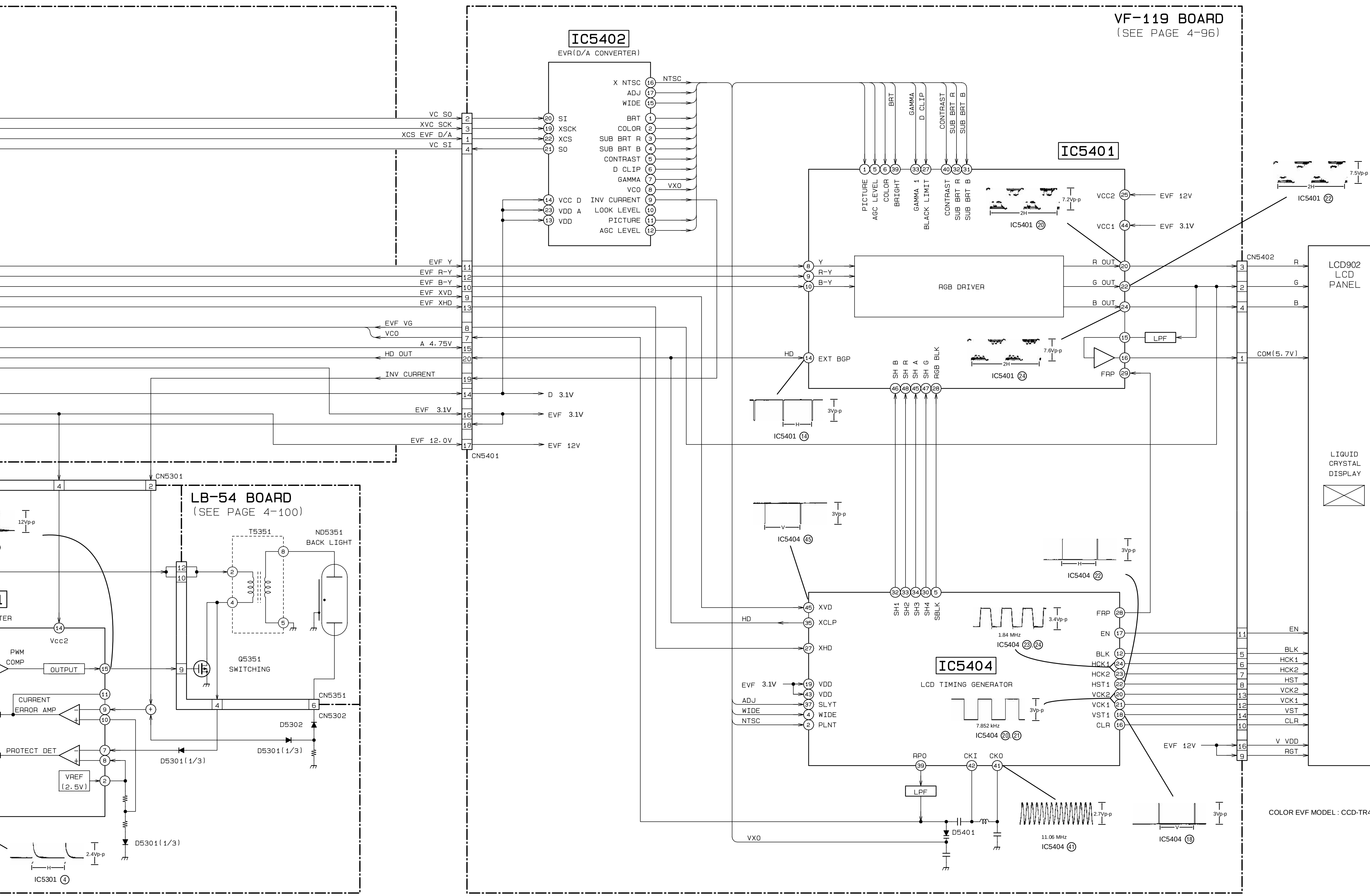

IC602
INITIAL RESET,
BACKUP VCC
MODE CONTROL
POWER
(DD-117)
(SEE PAGE 3-33)
VTR/CAMERA
CONTROL
(SEE PAGE 3-9)
AUDIO
(SEE PAGE 3-19)
CAMERA/VIDEO
(SEE PAGE 3-5)
X601
20MHz
X602
32.768KHz
S003
DATE
S004
PROGRAM AE
(TRV MODEL)
(IR TRANSMITTER MODEL)
FP-58(FLEXIBLE)
(VIDEO LIGHT MODEL)
TR MODEL : CCD-TR315/TR416/TR416PK/TR516/TR516PK/TR7
TRV MODEL : CCD-TRV16/TRV16PK/TRV36/TRV36PK/TRV43/T
REMOTE COMMANDER MODEL : CCD-TR516/TR516PK/TR716
CCD-TRV36/TRV36PK/TRV4
VIDEO LIGHT MODEL : CCD-TR516/TR516PK/TR716
CCD-TRV36/TRV36PK/TRV43/TRV46/T

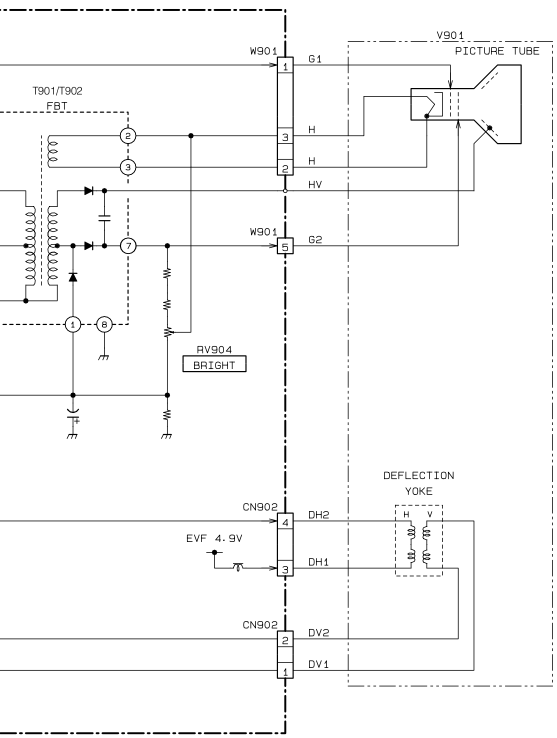


IC751
IR TRANSMITTER
(IR TRANSMITTER MODEL)
VIDEO CAR (IC152 39)
VIDEO DEV (IC152 40)
IR VIDEO (IC151 27)
AUDIO DEV (IC152 38)
CAMERA/ VIDEO
(SEE PAGE 3-8)
VIDEO SIGNAL PROCESS
AUDIO SIGNAL PROCESS
MIX
DRIVE
AMP
HPF
A 4.75V
VCC VCC
OSC VCC
STBY
FSC
IR ON
SIRCS PWM
IC751 7
IC751 15
IC751 16
3.58 MHz
0.25Vp-p
0.5Vp-p
0.34Vp-p
2usec
0.09usec
HP L OUT
HP R OUT
VTR UNREG
AU 3.1V
IR DRV CL
IR DRV EM
AU 2.8V
MIC L
F301
D301, 302
Q301-303
LED DRIVE
Q301, 303, 30
Q304
IR ON
A 4.75V
XSIRCS SIG
F TALLY
XCAM MODE SW
XVTR MODE SW
S303
S302
CN903
CN303
Q302
CN904
CN451
HP SENSE
HEADPHONE L
MONO
J451
HEADPHONE
SE-80 BOARD (1/2)
(TR716 only)
SE-81 BOARD (1/2)
(TRV MODEL)
(SEE PAGE 4-53)
PJ-90 BOARD (1/3)
(TR MODEL)
PJ-91 BOARD (1/3)
(TRV MODEL)
(SEE PAGE 4-56)
CN902
AUDIO
CN101
AUDIO (MONO)
J101 (1/3)
Q371
D371
SD HP L
SP L IN
SP R IN
POW MUTE
SP VOL
SP SEL
SP ON
BEEP SIG
HP ON
IC371
SPEAKER/HEAD PHONE AMP
HP L
L HP
R HP
MUTE
SP VOL
SP SEL
SP ON
BUZZ IN
HP ON
SP+
SP-
SP VCC
HP VCC
MT 4.75V
AU 4.75V
CN911
CN001
CN003
SP901
SPEAKER
CF-60 BOARD
(SEE PAGE 4-69)
(TR MODEL)
CF-61 BOARD
(SEE PAGE 4-72)
(TRV MODEL)
HP ON (IC604 7)
SP SEL (IC604 26)
SP ON (IC604 27)
BEEP SIG (IC604 37)
EXT MIC DET (IC604 82)
HP SENS (IC604 31)
F TALLY LED (IC604 56)
IR ON (IC604 57)
SIRCS PWM (IC604 59)
XSIRCS SIG (IC604 31)
XCAM MODE SW (CN912 7)
XVTR MODE SW (IC604 14)
MODE CONTROL
(SEE PAGE 3-17)
SWP (IC402 47)
XCS AU (IC402 20)
VC SI (IC402 80)
VC SO (IC402 79)
VC SCK (IC402 78)
AU XIN/OUT (IC402 17)
VTR/CAMERA CONTROL
(SEE PAGE 3-9)
TR MODEL : CCD-
TRV MODEL : CCD
IR TRANSMITTER

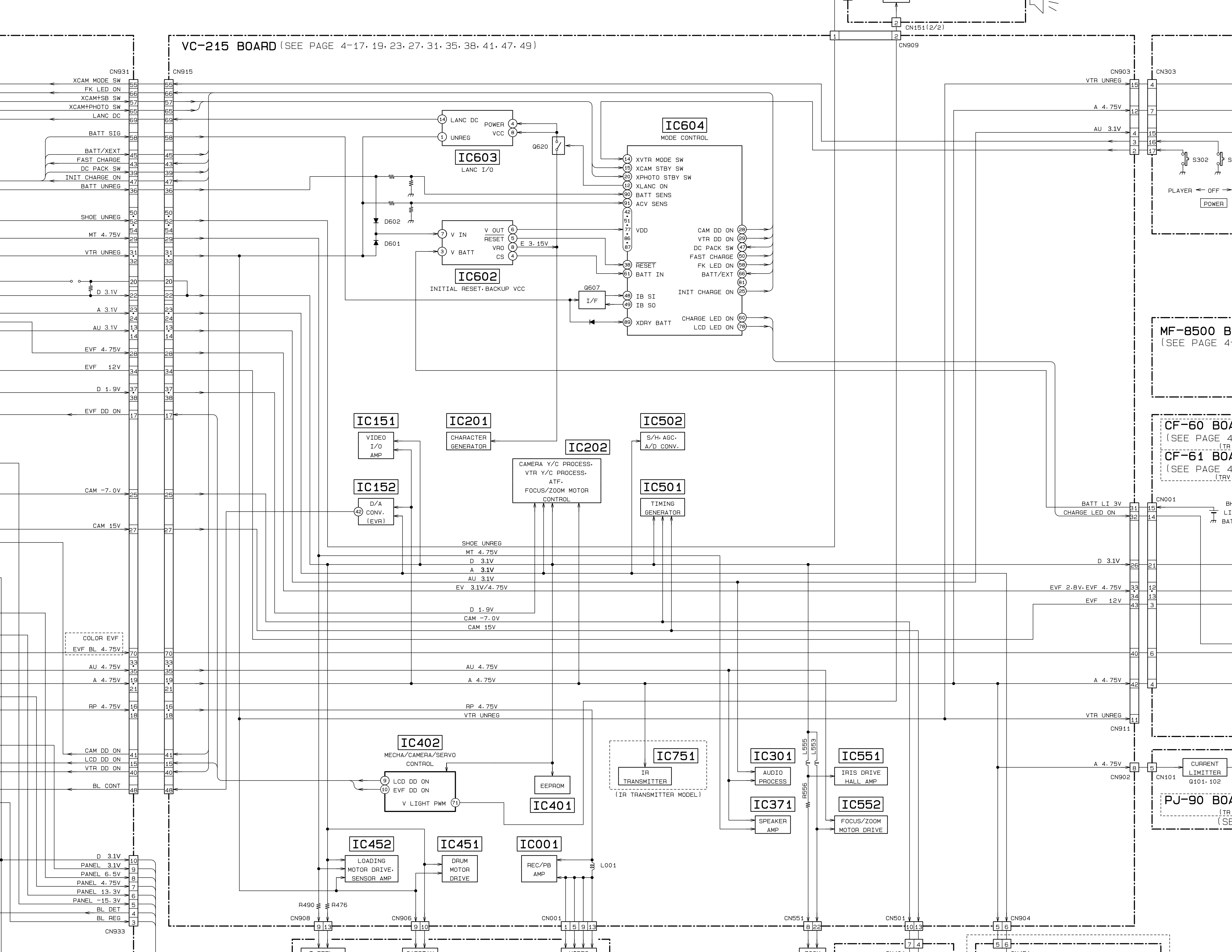


(86, 89, 90)
IC5501
EVR
XWIDE
NTSC
V REV
H REV
BRIGHT
COLOR
BRT R
BRT B
CONTRAST
RGB AMP
COM ADJ
VCO
V COM
H POS
BRT TST
COM TST
SO
XEN
CLK
SI
VCC
VDD
VDDA
COMP
IC5502
LCD DRIVER
SYNC IN
SYNC OUT
SUB CONT R
SUB CONT B
SUB BRT R
SUB BRT B
COM AMP
SYNC SEP
H FIL
Q5501
BUFFER
R OUT
G OUT
B OUT
COM OUT
VSH
VCC1
VCC2
PANEL 4.75V
PANEL 6.5V
PANEL 3.1V
W MSKV
W MSKT
FRPT
FRPV
CN5501
PANEL COM-0
HDB(HSY)
SYNC
VCO VOLTAGE
VR
VG
VB
(FOR CHECK)
POWER
(DD-117)
(SEE PAGE 3-33)
CN5802
BL REG
PANEL -15.3V
PANEL 13.2V
PANEL 4.75V
PANEL 6.5V
PANEL 3.1V
D 3.1V
BL DET
L5701
Q5701
INVERTER DRIVE
PANEL COM
HSY
VCO VOLT
COM-0
VCOM
VCOM AMP
IC5601
LCD
TIMING GENERATOR
IC5602
DAC AMP
IN+
OUT1
VCO
V REV
H REV
NTSC
COMTST
XWIDE
LCD HOLD
PANEL XVD
Q5602
SWITCH
Q5601
SWITCH
LPF
GRES
GPCK
GSRT
SRT2
SRT1
OE
CLR
MCLK
RIGHTO
RESET
DOWNO
TG-14
TG-15
TG-16
TG-20
TG-21
TG-22
TG-23
TG-24
TG-18
TG-17
TG-13
IC5801
LED DRIVE
CS
C/XD
SCK
COM1
COM4
SEG1
SEG16
CN5801
LCD902
LCD INDICATOR
FP-642
(PANEL REVERSE)
(PANEL CLOSE)
CN5805
S5802
BRIGHT-
S5803
VOLUME+
S5804
VOLUME-
IC5502 ⑯ 4.7Vp-p
IC5502 ⑬ 0.7Vp-p
IC5502 ⑳ 4.2Vp-p
IC5502 ㉒ 4.2Vp-p
IC5502 ㉔ 4.2Vp-p
IC5502 ⑧ 0.44Vp-p
IC5502 ⑨ 0.2Vp-p
IC5502 ⑩ 0.2Vp-p
IC5601 ㉖ Approx.5.8MHz : 4.1Vp-p
5601 ④ 4.7Vp-p
IC5601 ㉔ 4.7Vp-p Approx.2.9 MHz
IC5601 ㊲ 4.7Vp-p

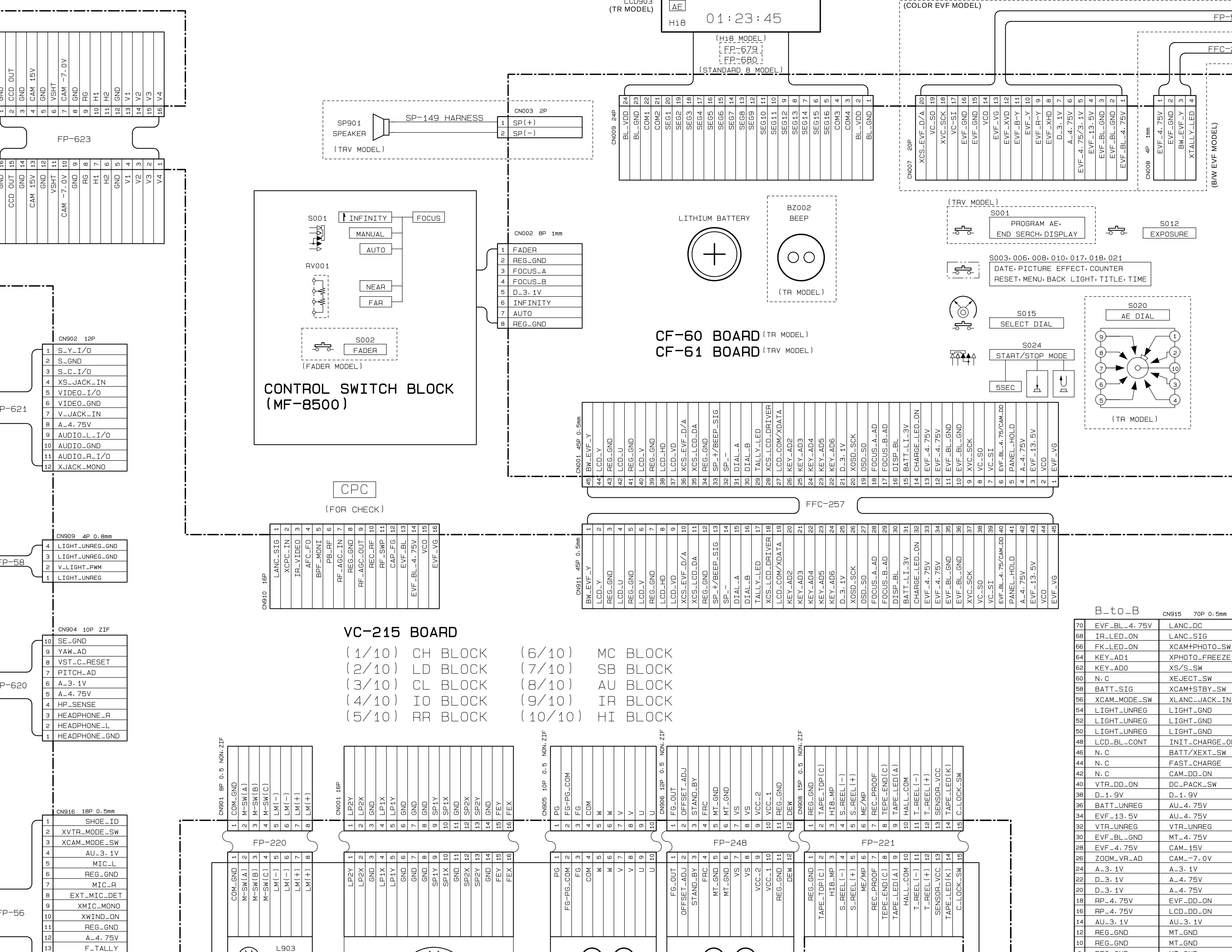

VF-119 BOARD
(SEE PAGE 4-96)
IC5402
EVR(D/A CONVERTER)
IC5401
RGB DRIVER
IC5404
LCD TIMING GENERATOR
LCD902
LCD
PANEL
LIQUID
CRYSTAL
DISPLAY
CN5401
CN5402
VC SO
XVC SCK
XCS EVF D/A
VC SI
EVF Y
EVF R-Y
EVF B-Y
EVF XVD
EVF XHD
EVF VG
VCO
A 4.75V
HD OUT
INV CURRENT
EVF 3.1V
EVF 12.0V
D 3.1V
EVF 12V
COM(5.7V)
LB-54 BOARD
(SEE PAGE 4-100)
T5351
ND5351
BACK LIGHT
Q5351
SWITCHING
CN5301
CN5351
CN5302
D5302
D5301(1/3)
PWM
COMP
OUTPUT
CURRENT
ERROR AMP
PROTECT DET
VREF
(2.5V)
Vcc2
D5401
IC5301 ④
IC5401 ⑳
IC5401 ㉒
IC5401 ㉔
IC5401 ⑭
IC5404 ㊺
IC5404 ㉒
IC5404 ㉓ ㉔
IC5404 ⑳ ㉑
IC5404 ㊶
IC5404 ⑱
COLOR EVF MODEL : CCD-TR4



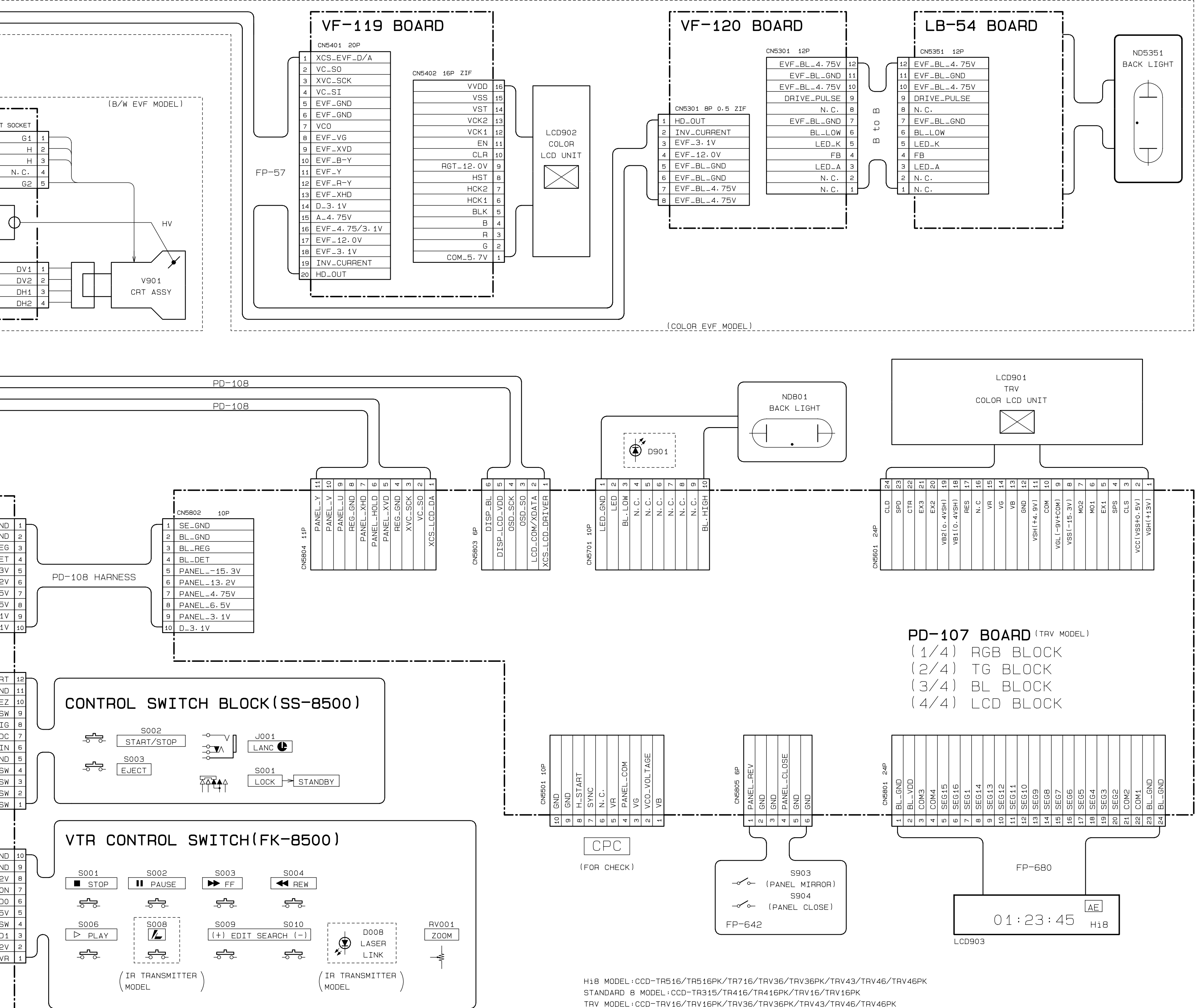
V901
PICTURE TUBE
T901/T902
FBT
W901
G1
H
H
HV
W901
G2
RV904
BRIGHT
DEFLECTION
YOKE
H
V
CN902
DH2
EVF 4.9V
DH1
CN902
DV2
DV1



VC-215 BOARD (SEE PAGE 4-17, 19, 23, 27, 31, 35, 38, 41, 47, 49)
IC604 MODE CONTROL
IC603 LANC I/O
IC602 INITIAL RESET, BACKUP VCC
IC151 VIDEO I/O AMP
IC201 CHARACTER GENERATOR
IC202 CAMERA Y/C PROCESS, VTR Y/C PROCESS, ATF, FOCUS/ZOOM MOTOR CONTROL
IC502 S/H, AGC, A/D CONV.
IC152 D/A CONV. (EVR)
IC501 TIMING GENERATOR
IC402 MECHA/CAMERA/SERVO CONTROL
IC401 EEPROM
IC751 IR TRANSMITTER (IR TRANSMITTER MODEL)
IC301 AUDIO PROCESS
IC371 SPEAKER AMP
IC551 IRIS DRIVE HALL AMP
IC552 FOCUS/ZOOM MOTOR DRIVE
IC452 LOADING MOTOR DRIVE, SENSOR AMP
IC451 DRUM MOTOR DRIVE
IC001 REC/PB AMP
CN931
CN915
CN933
CN903
CN303
CN001
CN911
CN902
CN101
CN909
CN151(2/2)
CN908
CN906
CN551
CN501
CN904
MF-8500 B
(SEE PAGE 4
CF-60 BOA
CF-61 BOA
PJ-90 BOA
CURRENT LIMITTER Q101, 102
S302
PLAYER OFF
POWER
XCAM MODE SW
FK LED ON
XCAM+SB SW
XCAM+PHOTO SW
LANC DC
BATT SIG
BATT/XEXT
FAST CHARGE
DC PACK SW
INIT CHARGE ON
BATT UNREG
SHOE UNREG
MT 4.75V
VTR UNREG
D 3.1V
A 3.1V
AU 3.1V
EVF 4.75V
EVF 12V
D 1.9V
EVF DD ON
CAM -7.0V
CAM 15V
COLOR EVF
EVF BL 4.75V
AU 4.75V
A 4.75V
RP 4.75V
CAM DD ON
LCD DD ON
VTR DD ON
BL CONT
PANEL 3.1V
PANEL 6.5V
PANEL 4.75V
PANEL 13.3V
PANEL -15.3V
BL DET
BL REG
BATT LI 3V
CHARGE LED ON
EVF 2.8V, EVF 4.75V
EV 3.1V/4.75V
D601
D602
Q620
Q607
L001
L553
L555
R556
R490
R476

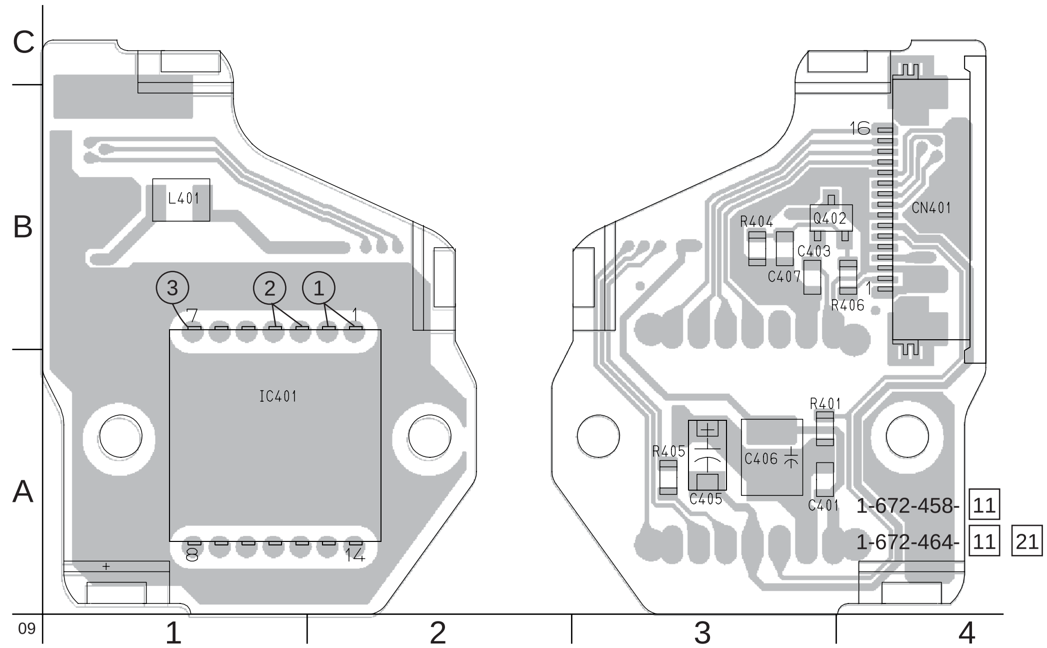


VC-215 BOARD
(1/10) CH BLOCK
(2/10) LD BLOCK
(3/10) CL BLOCK
(4/10) IO BLOCK
(5/10) RR BLOCK
(6/10) MC BLOCK
(7/10) SB BLOCK
(8/10) AU BLOCK
(9/10) IR BLOCK
(10/10) HI BLOCK
CF-60 BOARD (TR MODEL)
CF-61 BOARD (TRV MODEL)
CONTROL SWITCH BLOCK
(MF-8500)
CPC
(FOR CHECK)
FFC-257
FP-623
FP-621
FP-58
FP-620
FP-56
FP-220
FP-248
FP-221
SP-149 HARNESS
SP901
SPEAKER
(TRV MODEL)
LITHIUM BATTERY
BZ002
BEEP
(TR MODEL)
LCD903
(TR MODEL)
01:23:45
(Hi8 MODEL)
FP-679
FP-680
(STANDARD 8 MODEL)
(COLOR EVF MODEL)
(B/W EVF MODEL)
S001
PROGRAM AE,
END SERCH, DISPLAY
S012
EXPOSURE
S003, 006, 008, 010, 017, 018, 021
DATE, PICTURE EFFECT, COUNTER
RESET, MENU, BACK LIGHT, TITLE, TIME
S015
SELECT DIAL
S020
AE DIAL
S024
START/STOP MODE
5SEC
S002
FADER
(FADER MODEL)
RV001
B_to_B



Hi8 MODEL:CCD-TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK
STANDARD 8 MODEL:CCD-TR315/TR416/TR416PK/TRV16/TRV16PK
TRV MODEL:CCD-TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK

CD-210/211 BOARD (SIDE B) CD-210/211 BOARD (SIDE A)

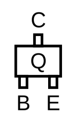


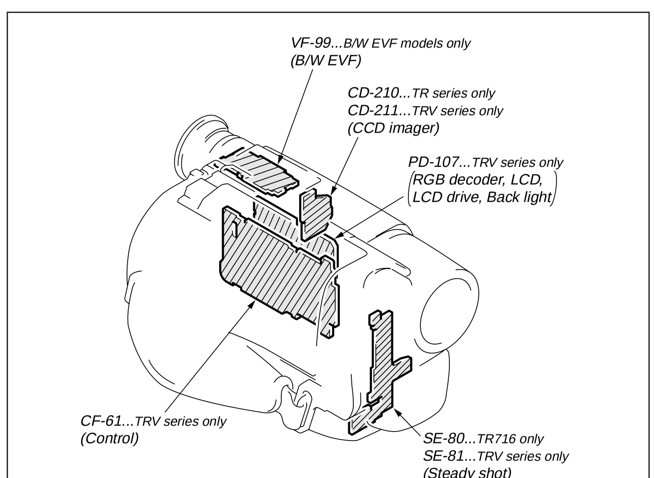
CD-210/ CD-211 BOARD	
C401	A-3
C403	B-3
C405	A-3
C406	A-3
C407	B-3
CN401	B-4
IC401	A-1
L401	B-1
Q402	B-3
R401	A-3
R404	B-3
R405	A-3
R406	B-4

- **For Printed Wiring Boards.**

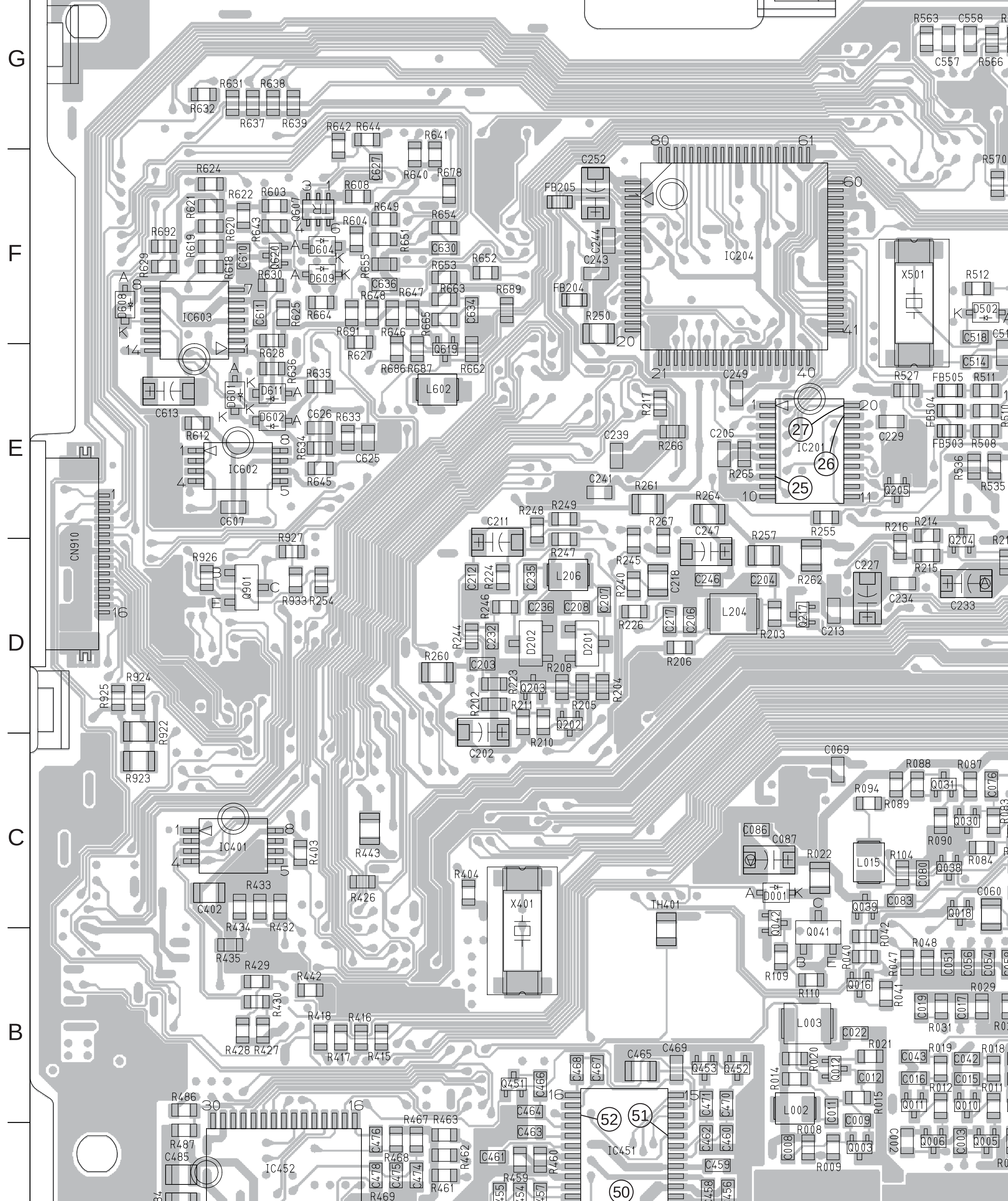
There are few cases that the part isn't mounted in this model is printed on this diagram.

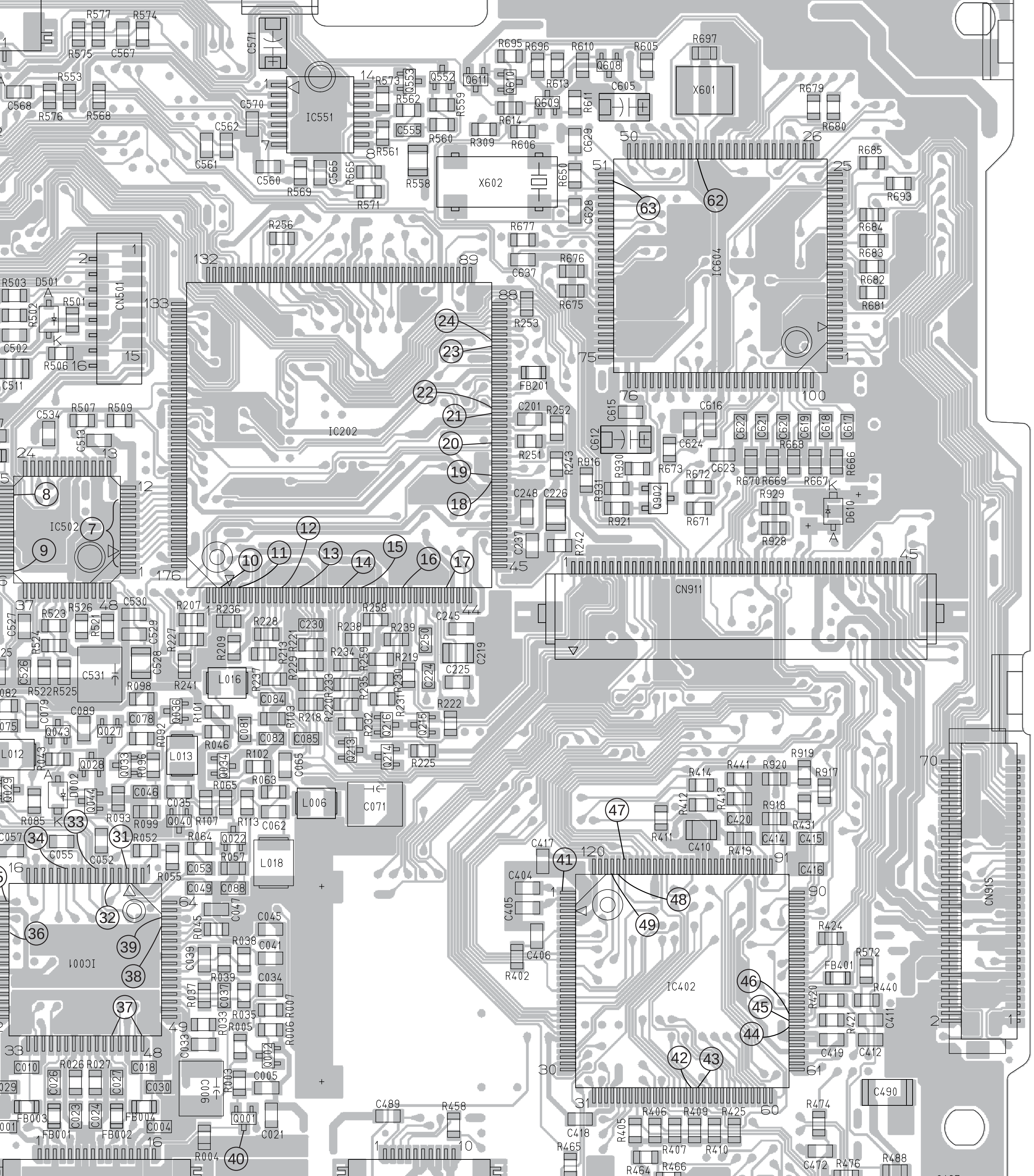
- Chip transistor



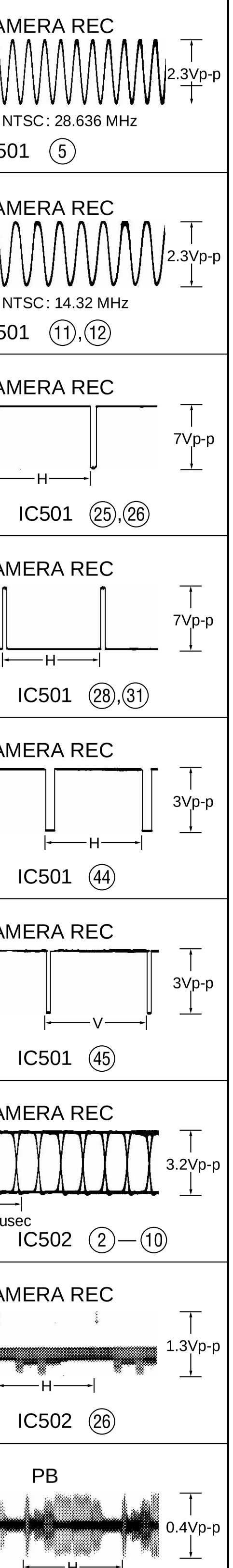


65	E-4	R479	A-2	R651	F-2
66	E-4	R480	A-2	R652	F-3
67	D-4	R481	A-2	R653	F-3
04	B-9	R482	A-2	R654	F-3
05	C-9	R483	A-1	R655	F-2
06	B-9	R484	A-1	R662	E-3
07	C-9	R485	A-1	R663	F-3
12	C-9	R486	B-1	R664	F-2
24	B-9	R487	A-1	R665	F-3
26	C-9	R504	E-6	R678	F-3
27	C-9	R508	E-5	R686	E-2
71	E-8	R510	E-5	R687	E-2
72	E-8	R511	E-5	R689	F-3
73	D-9	R512	F-5	R691	F-2
74	E-8	R527	E-5	R692	F-1
76	E-8	R530	F-7	R704	G-8
77	E-8	R535	E-5	R705	G-7
78	E-8	R536	E-5	R716	G-8
79	E-7	R537	E-6	R717	F-8
82	E-8	R552	G-6	R718	F-7
83	E-8	R555	G-7	R719	F-8
84	E-7	R563	G-5	R723	F-7
85	F-8	R564	G-6	R752	A-7
86	F-8	R566	G-5	R753	A-7
88	E-8	R567	G-6	R754	B-7
89	E-8	R570	F-5	R755	B-7
03	C-2	R579	G-6	R756	B-7
04	C-3	R582	G-6	R757	A-7
15	B-2	R584	G-7	R758	A-7
16	B-2	R603	F-2	R759	A-7
17	B-2	R604	F-2	R760	B-8
18	B-2	R608	F-2	R761	A-8
26	C-2	R612	E-1	R762	A-8
27	B-2	R618	F-1	R763	A-8
28	B-2	R619	F-1	R764	B-8
29	B-2	R620	F-1	R765	B-8
30	B-2	R621	F-1	R766	A-8
32	C-2	R622	F-2	R767	B-8
33	C-2	R624	F-1	R768	A-8
34	C-2	R625	F-2	R770	A-8
35	B-2	R627	F-2	R771	A-8
42	B-2	R628	F-2	R772	A-8
43	C-2	R629	F-1	R773	B-8
52	A-3	R630	F-2	R774	B-9
53	A-3	R631	G-2	R775	A-8
54	A-3	R632	G-1	R922	D-1
55	A-3	R633	E-2	R923	C-1
56	A-3	R634	E-2	R924	D-1
57	A-3	R635	E-2	R925	D-1
59	A-3	R636	E-2	R926	D-1
60	A-3	R637	G-2	R927	D-2
61	A-3	R638	G-2	R933	D-2
62	A-3	R639	G-2		
63	A-3	R640	F-2	TH401	C-4
67	A-2	R641	F-3		
68	A-2	R642	G-2	X151	D-7
69	A-2	R643	F-2	X401	C-3
70	A-2	R644	G-2	X501	F-5





C006	B-14	C339	A-11	D551	G-13	R099	C-14
C007	A-13	C340	C-12	D610	E-17	R101	C-14
C010	B-13	C341	A-11	FB001	A-13	R102	C-14
C018	B-14	C342	B-12	FB002	A-13	R107	C-14
C021	A-14	C343	C-11	FB003	A-13	R113	C-14
C023	A-13	C344	B-12	FB004	A-14	R161	D-11
C024	A-13	C345	A-12	FB201	E-16	R162	C-11
C026	B-13	C346	B-12	FB401	B-17	R165	D-10
C027	B-13	C347	B-12	FB502	E-13	R166	D-10
C028	B-12	C349	B-12	FB701	F-12	R167	D-10
C029	B-13	C404	C-16			R170	D-10
C030	B-14	C405	B-16	IC001	B-13	R175	D-12
C031	B-13	C406	B-16	IC151	D-11	R176	D-12
C032	B-13	C410	C-17	IC202	E-15	R177	D-10
C033	B-14	C411	B-17	IC301	B-11	R178	D-10
C034	B-14	C412	B-17	IC402	B-16	R187	C-12
C035	C-14	C414	C-17	IC502	E-13	R207	D-14
C036	B-13	C415	C-17	IC551	G-15	R209	D-14
C037	B-14	C416	C-17	IC604	F-17	R213	D-14
C039	B-14	C417	C-16	IC701	E-11	R218	D-15
C041	B-14	C418	A-16			R219	D-15
C044	B-13	C419	B-17	L001	B-13	R220	D-15
C045	B-14	C420	C-17	L004	B-12	R221	D-14
C046	C-14	C472	A-17	L006	C-15	R222	C-15
C047	B-14	C486	A-12	L009	C-12	R225	C-15
C049	C-14	C487	A-18	L012	C-13	R227	D-14
C052	C-13	C488	A-18	L013	C-14	R228	D-14
C053	C-14	C490	B-18	L016	D-14	R229	D-14
C055	C-13	C501	F-13	L018	C-14	R230	D-15
C057	C-13	C502	E-13	L502	D-12	R231	D-15
C059	C-12	C503	E-13			R232	C-15
C061	C-13	C511	E-13	Q001	A-14	R233	D-15
C062	C-14	C512	D-13	Q002	B-14	R234	D-15
C065	C-14	C513	E-13	Q003	C-14	R235	D-15
C071	C-15	C516	E-13	Q020	C-12	R235	D-15
C073	C-13	C517	E-13	Q022	C-14	R236	D-14
C078	C-14	C519	E-13	Q024	C-13	R237	D-14
C079	C-13	C520	E-13	Q027	C-13	R238	D-15
C081	C-14	C521	E-13	Q028	C-13	R239	D-15
C082	C-14	C522	D-13	Q029	C-13	R241	D-14
C084	D-14	C523	D-13	Q036	D-14	R242	D-16
C085	C-14	C524	D-13	Q040	C-14	R243	E-16
C088	C-14	C525	D-13	Q043	C-13	R251	E-16
C089	C-13	C526	D-13	Q044	C-13	R252	E-16
C156	E-12	C527	D-13	Q153	D-11	R253	F-16
C160	D-12	C528	D-14	Q154	D-11	R256	F-14
C161	E-12	C529	D-14	Q156	D-10	R258	D-15
C162	E-11	C530	D-14	Q213	C-15	R259	D-15
C163	E-11	C531	D-13	Q214	C-15	R302	C-10
C164	D-11	C532	D-13	Q215	C-15	R303	B-10
C166	D-12	C533	D-13	Q216	C-15	R308	B-11
C168	D-11	C534	E-13	Q301	C-10	R309	G-15
C169	D-12	C535	E-13	Q302	B-10	R310	B-11
C170	D-11	C551	G-12	Q305	A-10	R311	B-10
C171	D-12	C552	G-13	Q308	C-10	R313	A-10
C172	D-12	C555	G-15	Q309	C-10	R314	B-10
C173	D-12	C560	F-14	Q310	A-11	R315	A-10
C177	D-12	C561	G-14	Q371	A-10	R316	A-10
C178	D-12	C562	G-14	Q372	A-10	R317	A-11
C179	D-12	C565	F-15	Q456	A-18	R318	C-12
C180	D-12	C567	G-14	Q501	D-13	R318	B-12
C181	C-11	C568	G-13	Q552	G-15	R319	A-11
C184	D-11	C570	G-14	Q553	G-15	R321	A-10
C185	C-12	C571	G-14	Q608	G-16	R322	A-12
C186	E-11	C605	G-16	Q609	G-16	R323	B-12
C187	C-11	C612	E-16	Q610	G-16	R325	B-12
C188	C-12	C615	E-16	Q611	G-15	R331	B-12
C189	C-12	C616	E-17	Q701	G-11	R343	A-12
C201	E-16	C617	E-17	Q702	G-12	R350	A-12
C219	D-15	C618	E-17	Q703	F-12	R402	B-16
C224	D-15	C619	E-17	Q704	F-11	R405	A-16
C225	D-15	C620	E-17	Q902	E-16	R406	A-16
C226	E-16	C621	E-17			R407	A-16
C230	D-15	C622	E-17	R003	B-14	R409	A-17
C237	D-16	C623	E-17	R004	A-14	R410	A-17
C245	D-15	C624	E-16	R005	B-14	R411	C-16
C248	E-16	C628	F-16	R006	B-14	R412	C-17
C250	D-15	C629	G-16	R007	B-14	R413	C-17
C275	C-13	C637	F-16	R026	B-13	R414	C-17
C304	B-12	C702	F-11	R027	B-13	R420	B-17
C306	B-10	C703	F-11	R032	B-13	R421	B-17
C307	A-10	C705	F-12	R033	B-14	R424	B-17
C308	B-10	C706	F-12	R034	B-13	R425	A-17
C309	B-10	C707	F-12	R035	B-14	R431	C-17
C310	B-10	C708	F-12	R037	B-14	R440	B-17
C312	A-10	C709	F-11	R038	B-14	R441	C-17
C313	B-10	C710	E-12	R039	B-14	R464	A-16
C314	A-11	C711	E-12	R043	C-13	R465	A-16
C315	B-10	C712	E-12	R045	B-14	R466	A-16
C316	B-10	C713	E-12	R046	C-14	R474	A-17
C317	A-11	C716	F-12	R052	C-14	R476	A-17
C319	B-11	C717	F-12	R055	C-14	R485	A-15
C320	A-10	C849	A-15	R057	C-14	R488	A-18
C321	A-10	C918	B-11	R059	C-13	R490	A-18
C322	C-11			R060	C-13	R501	F-13
C323	A-11	CN001	A-13	R061	C-12	R502	F-13
C324	A-11	CN501	F-13	R062	B-12	R503	F-13



VC-215 BOARD(1/10)

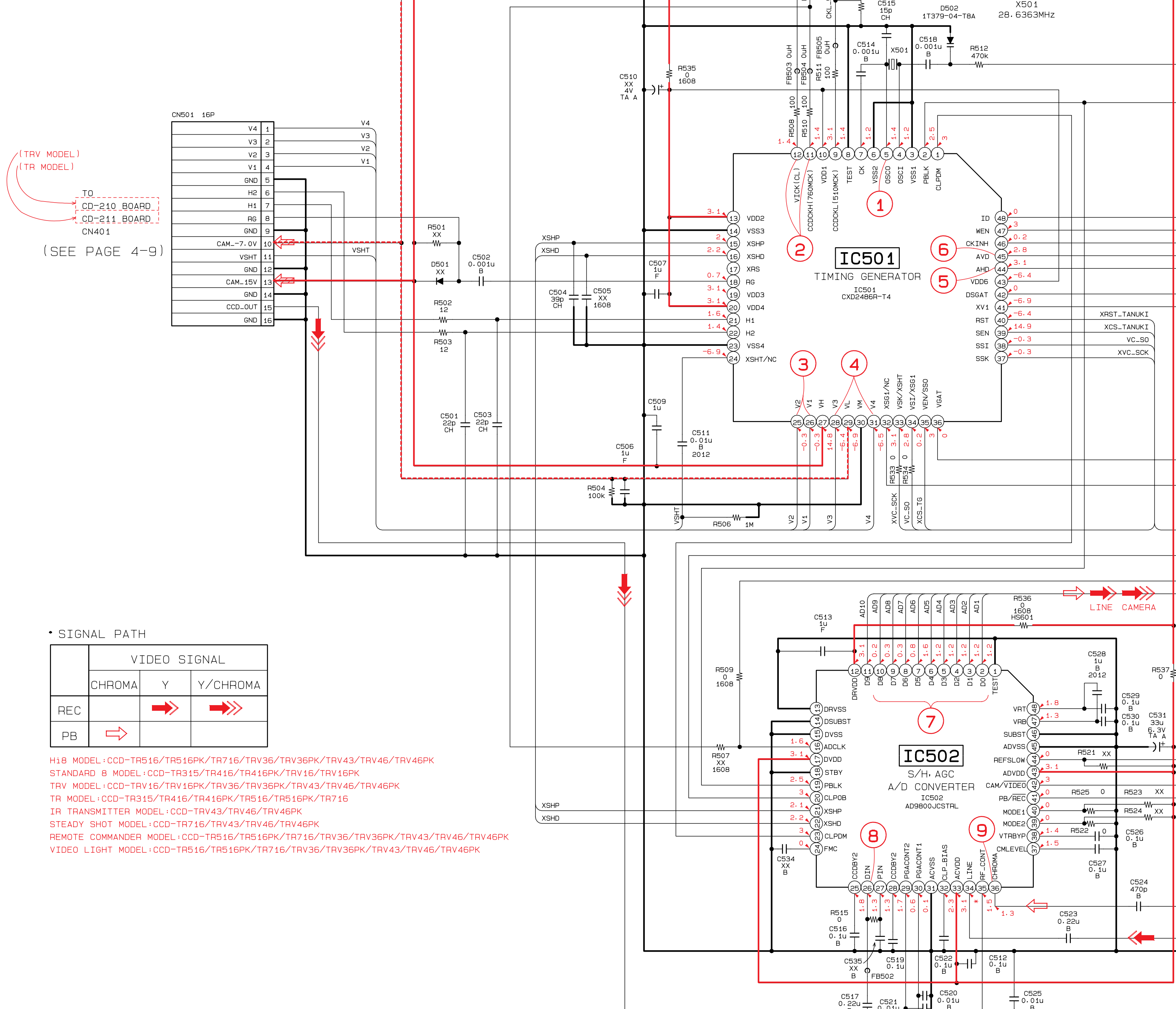
CAMERA1(CH BLOCK)

-REF. NO. : 1,000 SERIES-

XX MARK : NO MOUNT

NO MARK : CAMERA REC mode

* : Can not be measured.



• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡	➡➡
PB	⇨		

Hi8 MODEL:CCD-TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK

STANDARD 8 MODEL:CCD-TR315/TR416/TR416PK/TRV16/TRV16PK

TRV MODEL:CCD-TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK

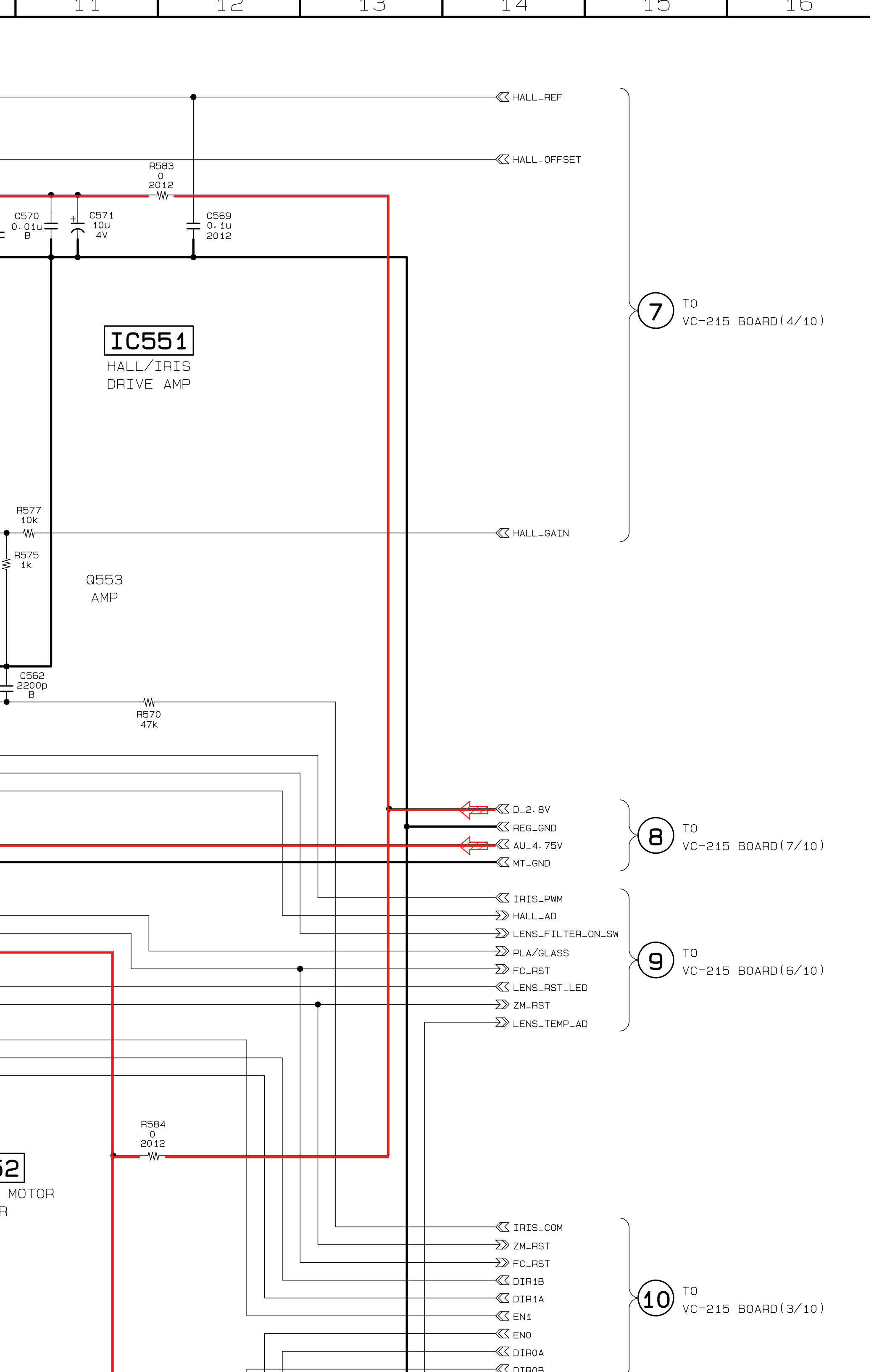
TR MODEL:CCD-TR315/TR416/TR416PK/TR516/TR516PK/TR716

IR TRANSMITTER MODEL:CCD-TRV43/TRV46/TRV46PK

STEADY SHOT MODEL:CCD-TR716/TRV43/TRV46/TRV46PK

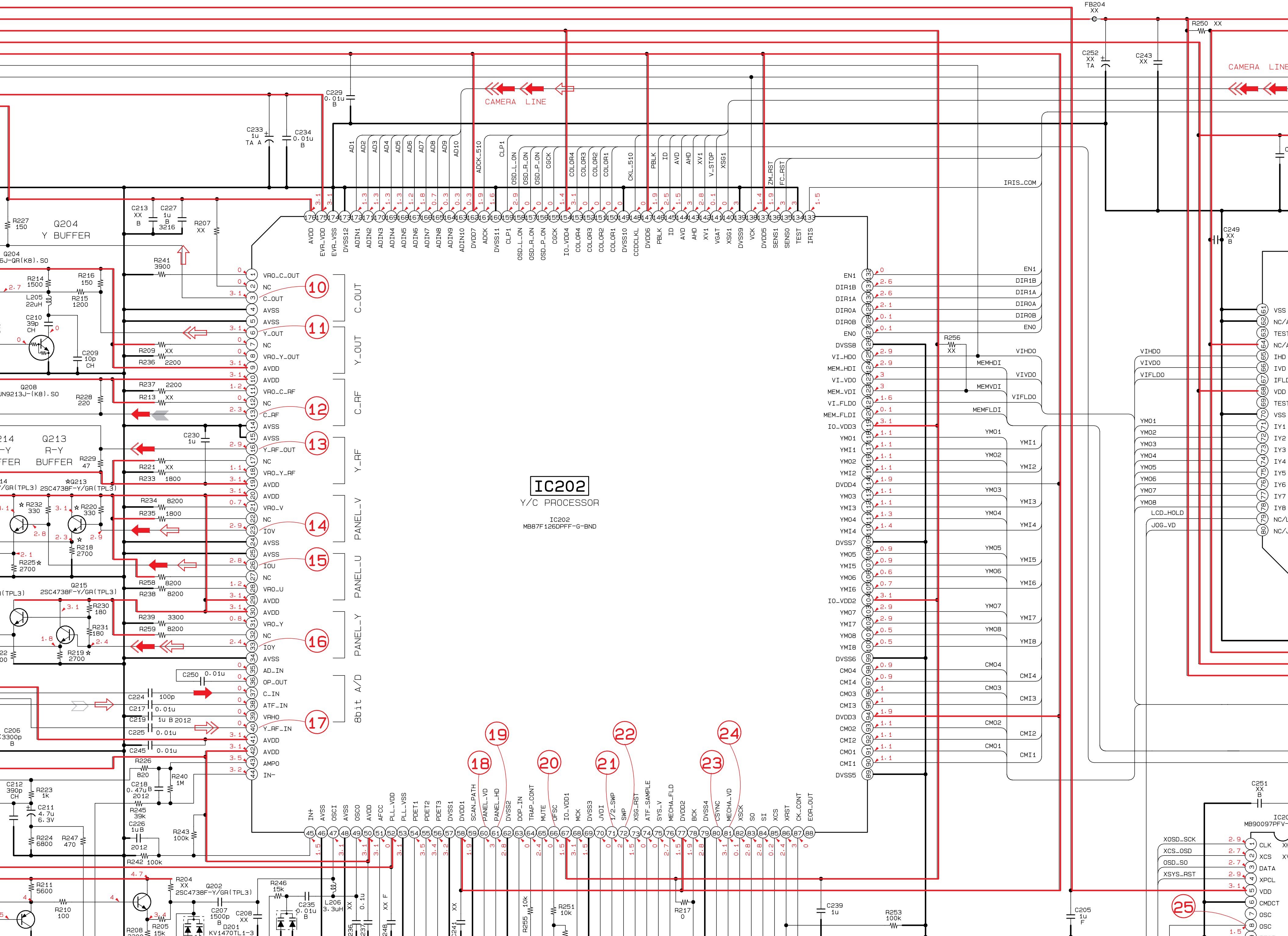
REMOTE COMMANDER MODEL:CCD-TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK

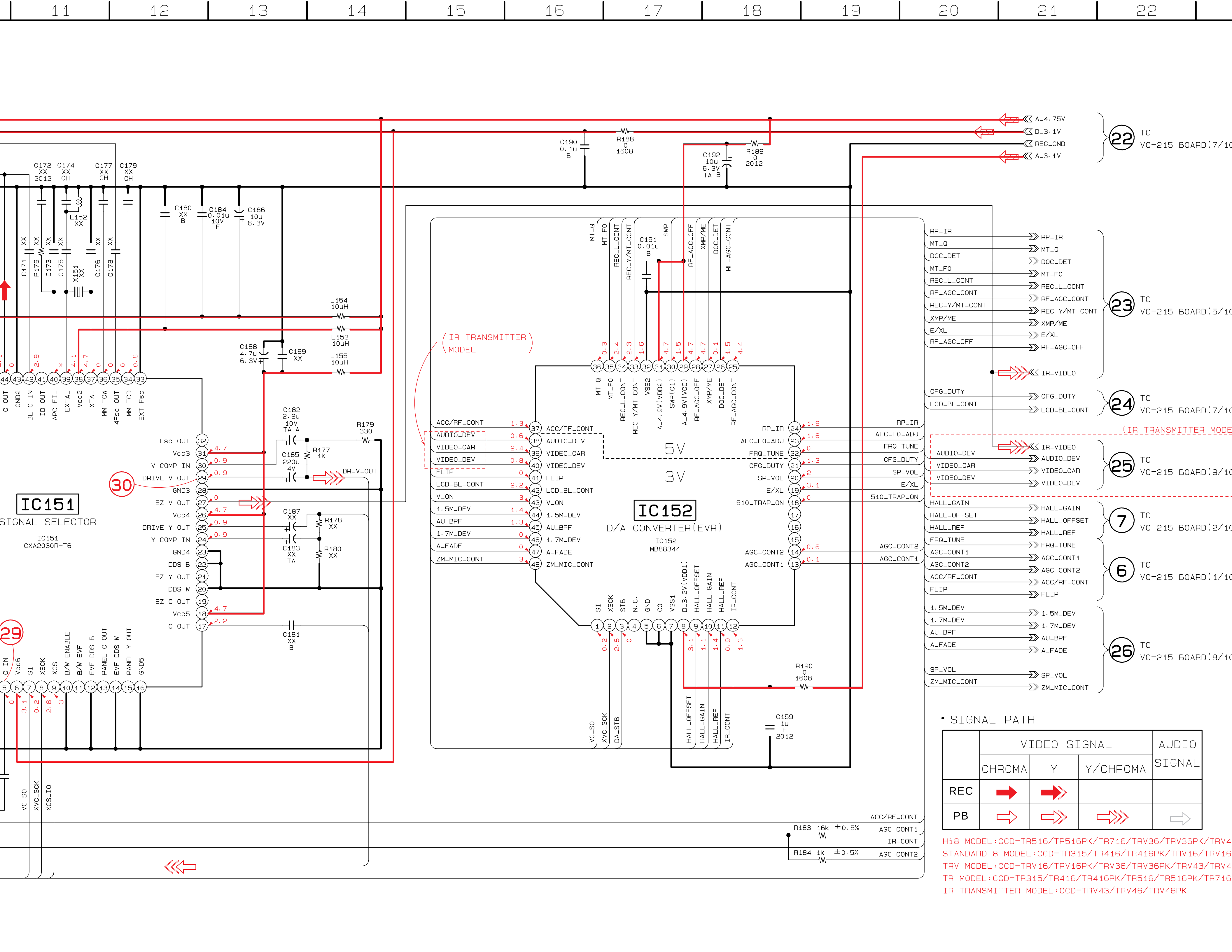
VIDEO LIGHT MODEL:CCD-TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK



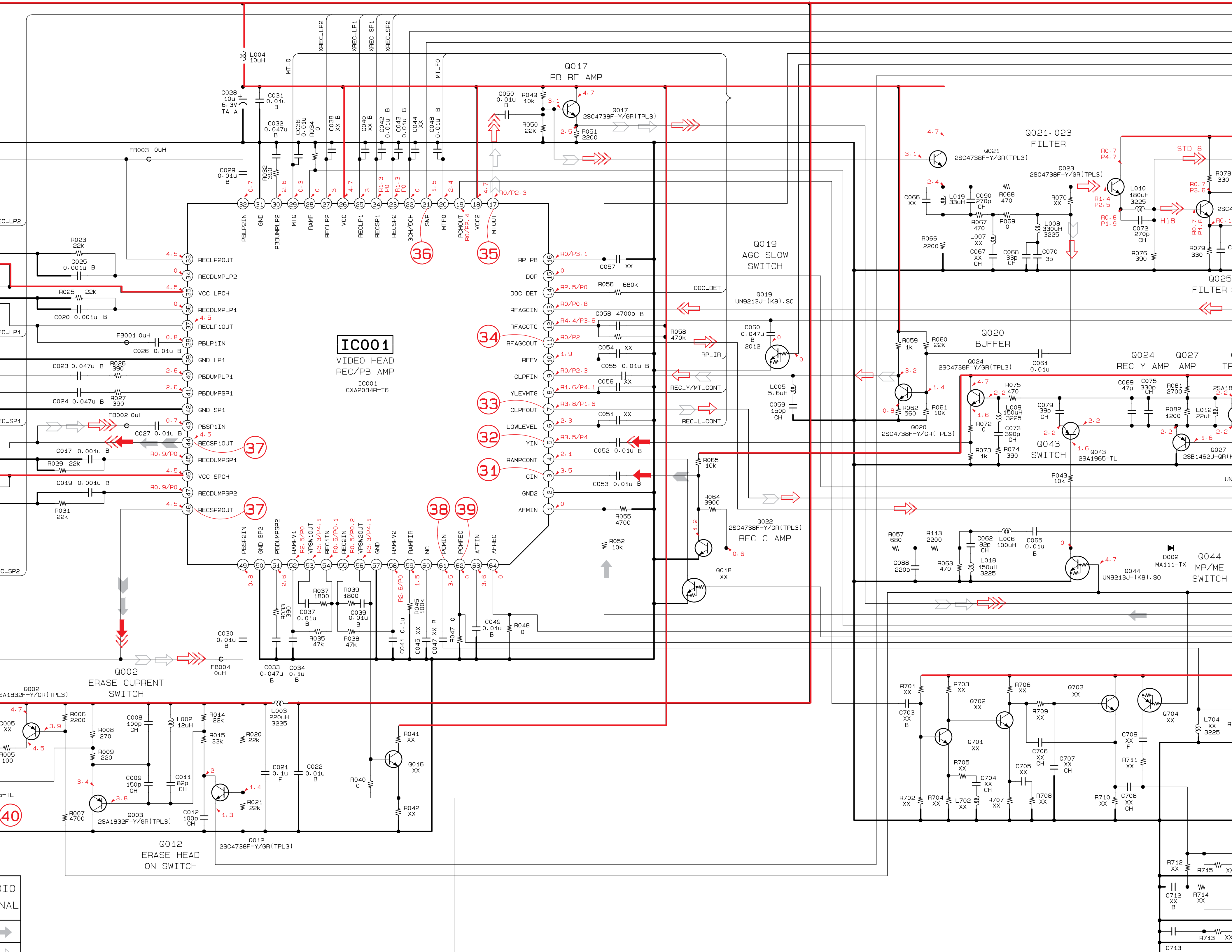
HALL_REF
HALL_OFFSET
R583
0
2012
C570
0.01u
B
C571
10u
4V
C569
0.1u
2012
7
TO
VC-215 BOARD(4/10)
IC551
HALL/IRIS
DRIVE AMP
R577
10k
HALL_GAIN
R575
1k
Q553
AMP
C562
2200p
B
R570
47k
D_2.8V
REG_GND
AU_4.75V
MT_GND
8
TO
VC-215 BOARD(7/10)
IRIS_PWM
HALL_AD
LENS_FILTER_ON_SW
PLA/GLASS
FC_RST
LENS_RST_LED
ZM_RST
LENS_TEMP_AD
9
TO
VC-215 BOARD(6/10)
R584
0
2012
MOTOR
IRIS_COM
ZM_RST
FC_RST
DIR1B
DIR1A
EN1
EN0
DIR0A
10
TO
VC-215 BOARD(3/10)

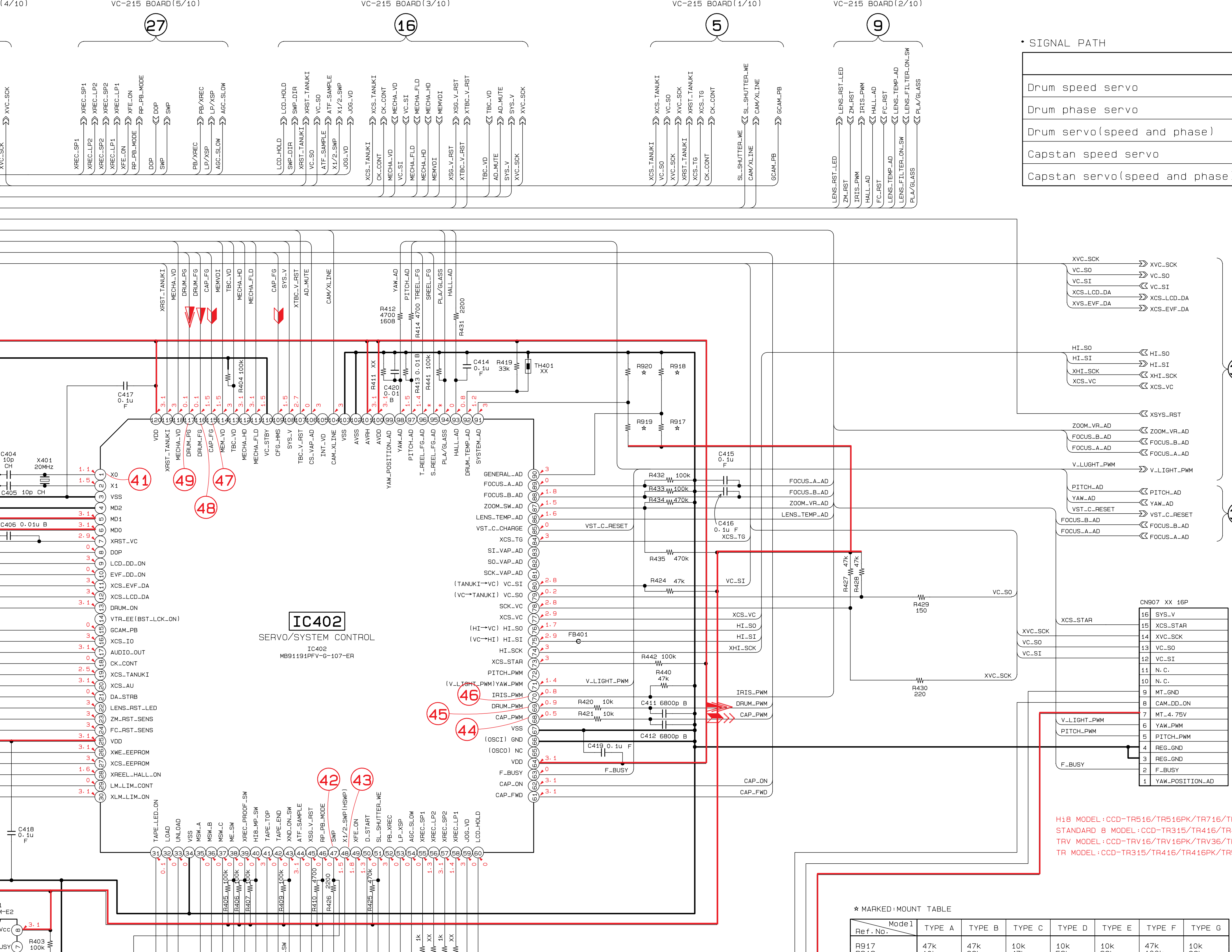
0, 225, 232, Q213, 214 (CCD-TR416/TR416PK/516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)



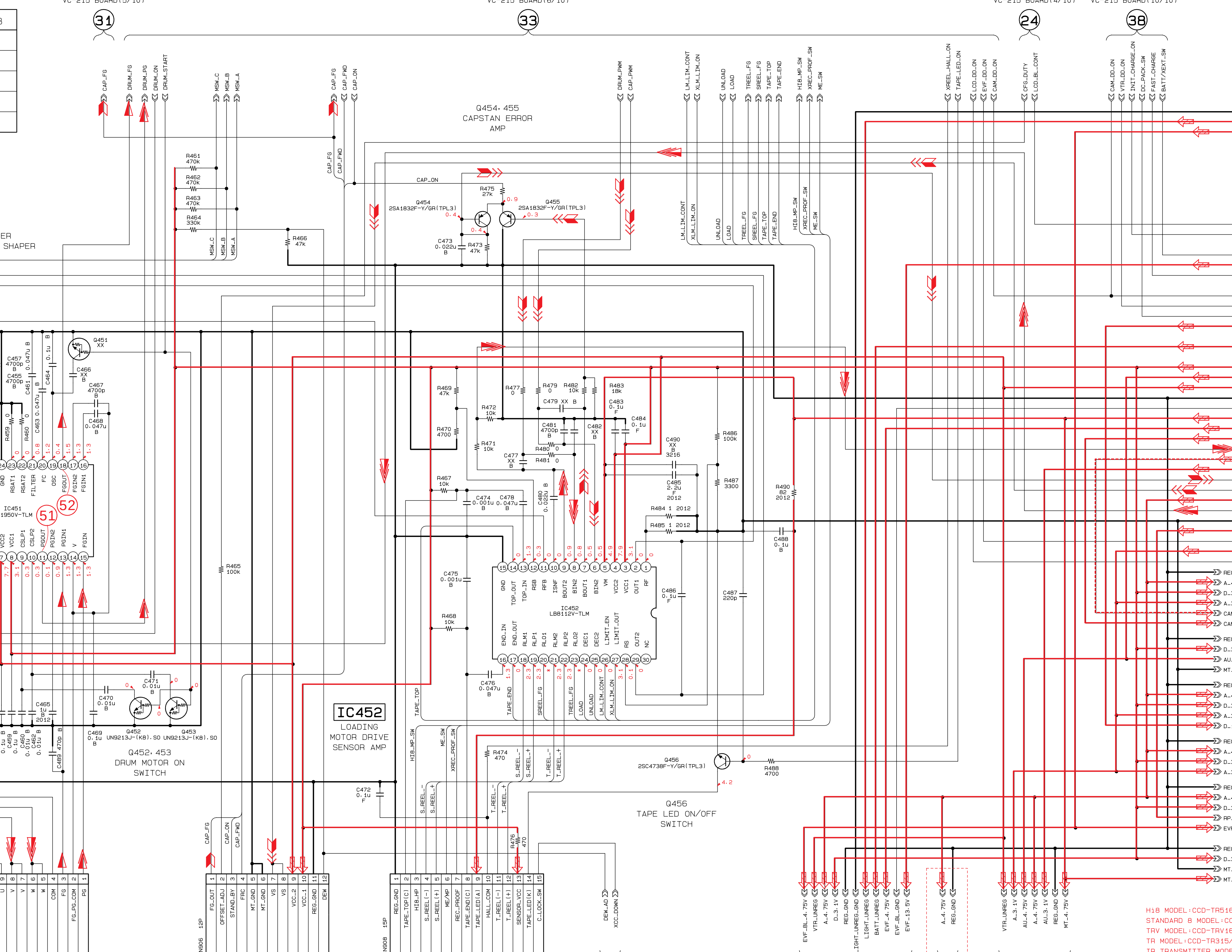


IC151
SIGNAL SELECTOR
IC151
CXA2030R-T6
IC152
D/A CONVERTER(EVR)
IC152
MB88344
5V
3V
(IR TRANSMITTER MODEL)
TO
VC-215 BOARD(7/10)
VC-215 BOARD(5/10)
VC-215 BOARD(7/10)
VC-215 BOARD(9/10)
VC-215 BOARD(2/10)
VC-215 BOARD(1/10)
VC-215 BOARD(8/10)
A_4.75V
D_3.1V
REG_GND
A_3.1V
• SIGNAL PATH
VIDEO SIGNAL
AUDIO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
Hi8 MODEL:CCD-TR516/TR516PK/TR716/TRV36/TRV36PK/TRV4
STANDARD 8 MODEL:CCD-TR315/TR416/TR416PK/TRV16/TRV16
TRV MODEL:CCD-TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV4
TR MODEL:CCD-TR315/TR416/TR416PK/TR516/TR516PK/TR716
IR TRANSMITTER MODEL:CCD-TRV43/TRV46/TRV46PK


IC001
VIDEO HEAD
REC/PB AMP
IC001
CXA2084R-T6
Q017
PB RF AMP
Q019
AGC SLOW
SWITCH
Q020
BUFFER
Q021,023
FILTER
Q022
REC C AMP
Q024
REC Y AMP
Q027
AMP
Q043
SWITCH
Q044
MP/ME
SWITCH
Q002
ERASE CURRENT
SWITCH
Q012
ERASE HEAD
ON SWITCH



VC-215 BOARD(5/10)
VC-215 BOARD(3/10)
VC-215 BOARD(1/10)
VC-215 BOARD(2/10)
SIGNAL PATH
Drum speed servo
Drum phase servo
Drum servo(speed and phase)
Capstan speed servo
Capstan servo(speed and phase)
IC402
SERVO/SYSTEM CONTROL
IC402
MB91191PFV-G-107-ER
CN907 XX 16P
Hi8 MODEL:CCD-TR516/TR516PK/TR716/T
STANDARD 8 MODEL:CCD-TR315/TR416/TR
TRV MODEL:CCD-TRV16/TRV16PK/TRV36/T
TR MODEL:CCD-TR315/TR416/TR416PK/TR
☆ MARKED:MOUNT TABLE

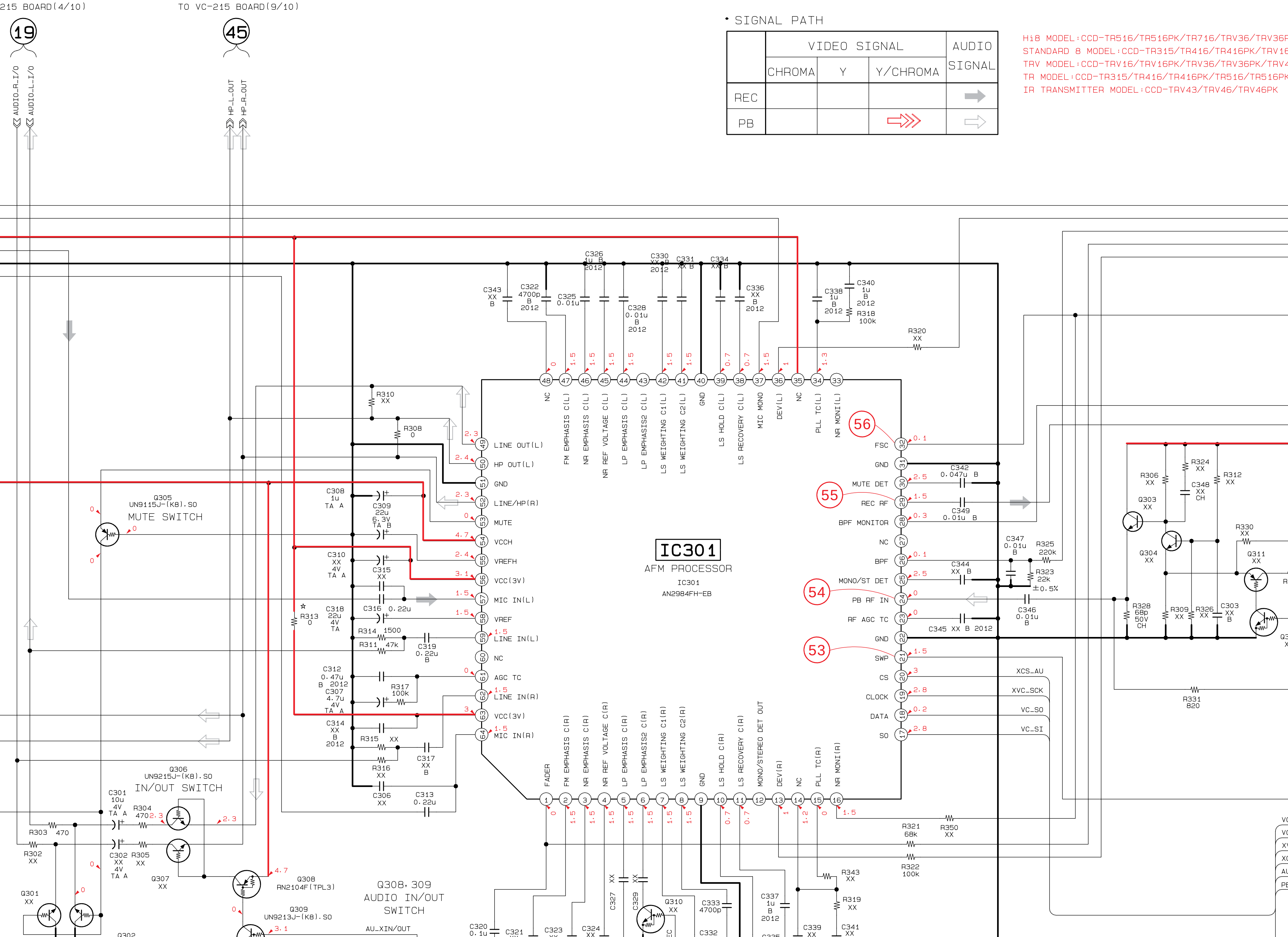


VC-215 BOARD(5/10)
VC-215 BOARD(6/10)
VC-215 BOARD(4/10)
VC-215 BOARD(10/10)
Q454, 455
CAPSTAN ERROR
AMP
IC452
LOADING
MOTOR DRIVE
SENSOR AMP
IC452
LB8112V-TLM
Q452, 453
DRUM MOTOR ON
SWITCH
Q456
TAPE LED ON/OFF
SWITCH

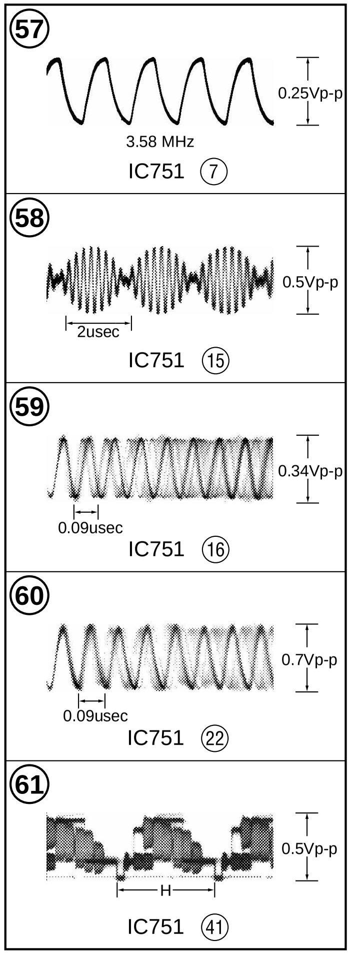
• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB			⇨⟫	⇨

Hi8 MODEL:CCD-TR516/TR516PK/TR716/TRV36/TRV36P
STANDARD 8 MODEL:CCD-TR315/TR416/TR416PK/TRV16
TRV MODEL:CCD-TRV16/TRV16PK/TRV36/TRV36PK/TRV4
TR MODEL:CCD-TR315/TR416/TR416PK/TR516/TR516PK
IR TRANSMITTER MODEL:CCD-TRV43/TRV46/TRV46PK



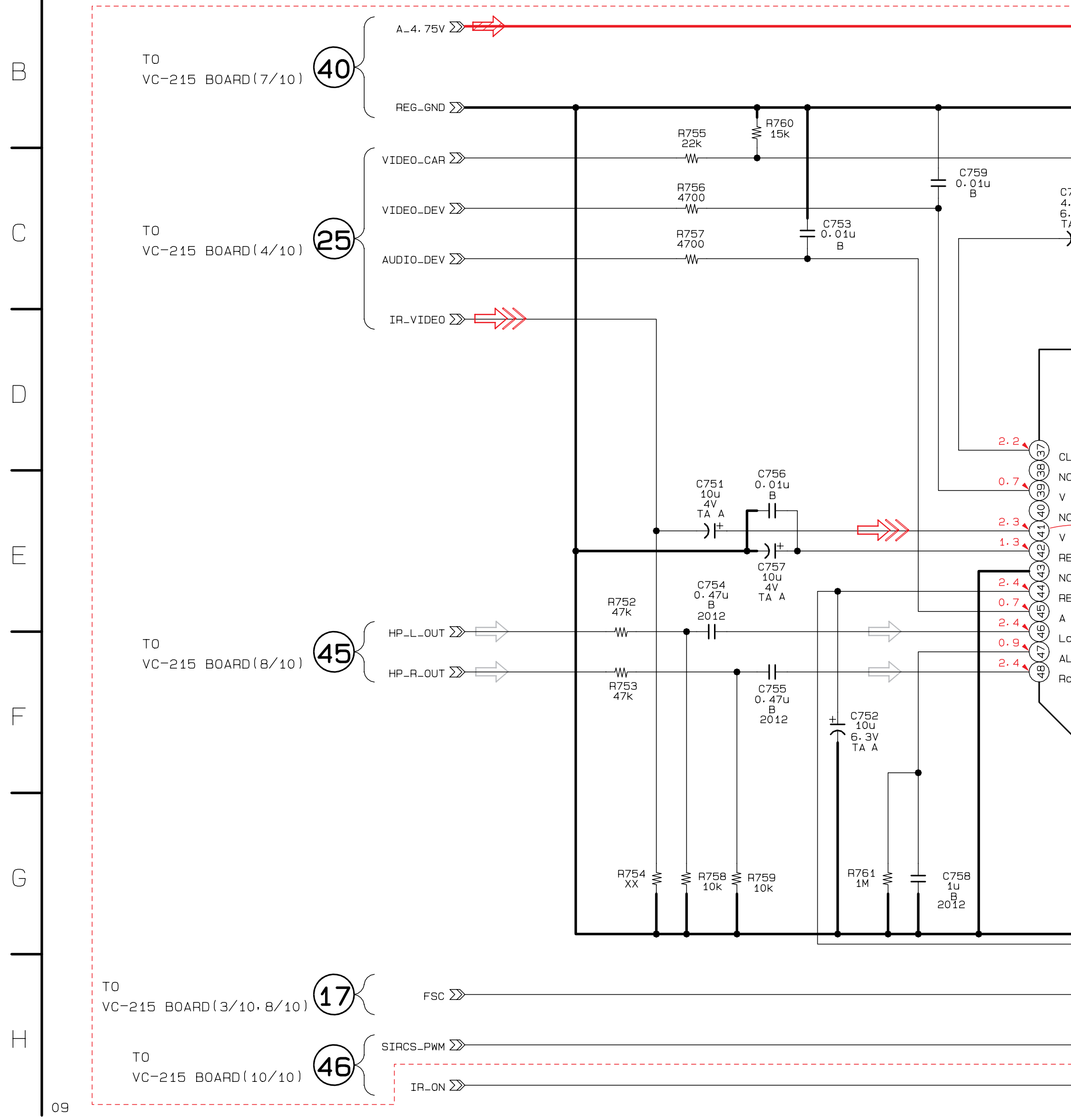
PB

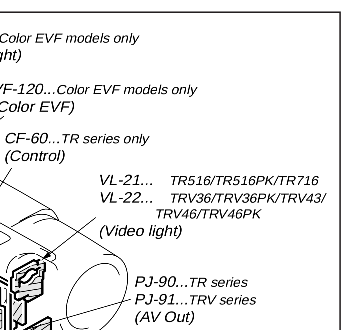


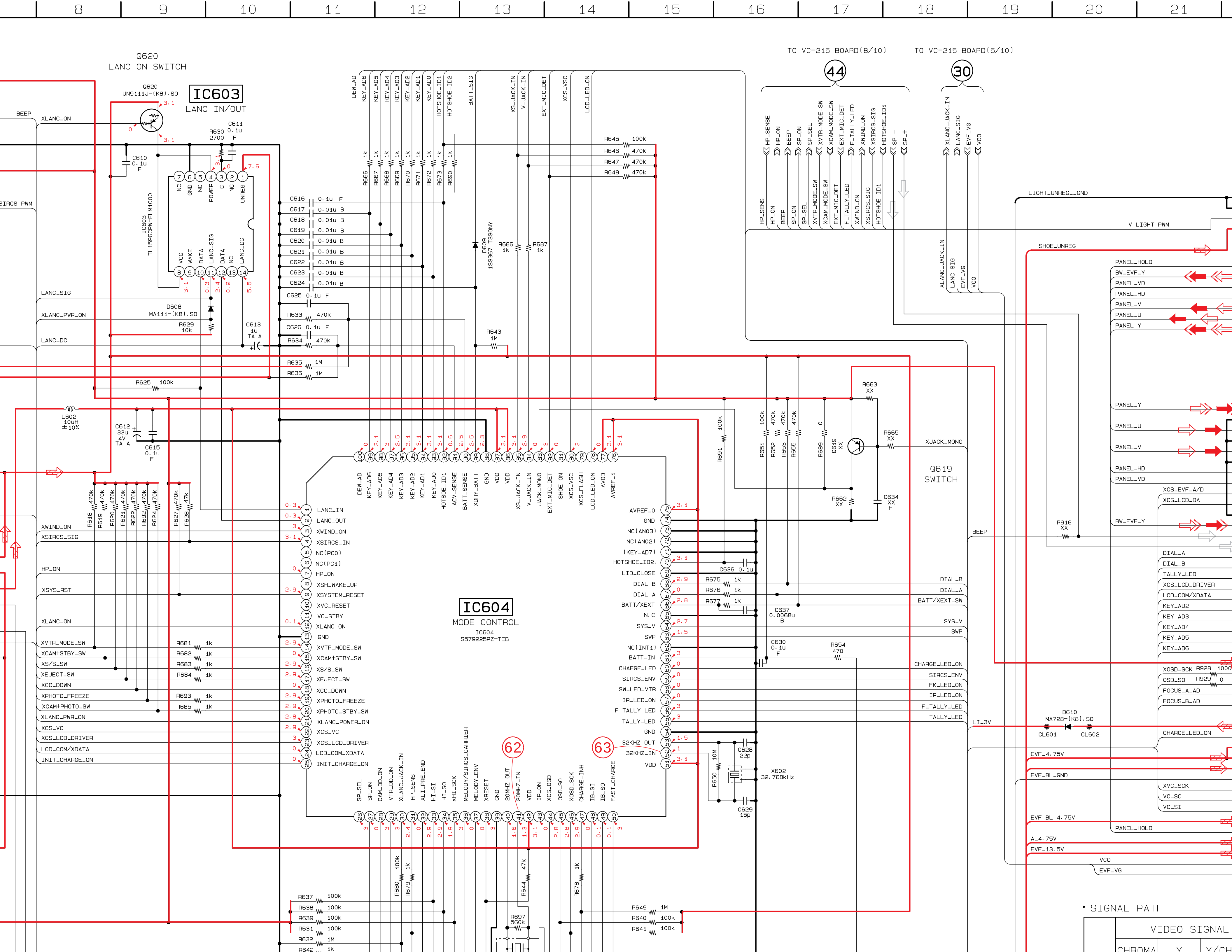
VC-215 BOARD(9/10)

IR TRANSMITTER(IR BLOCK)

-REF. NO. : 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode(LASER LINK ON)

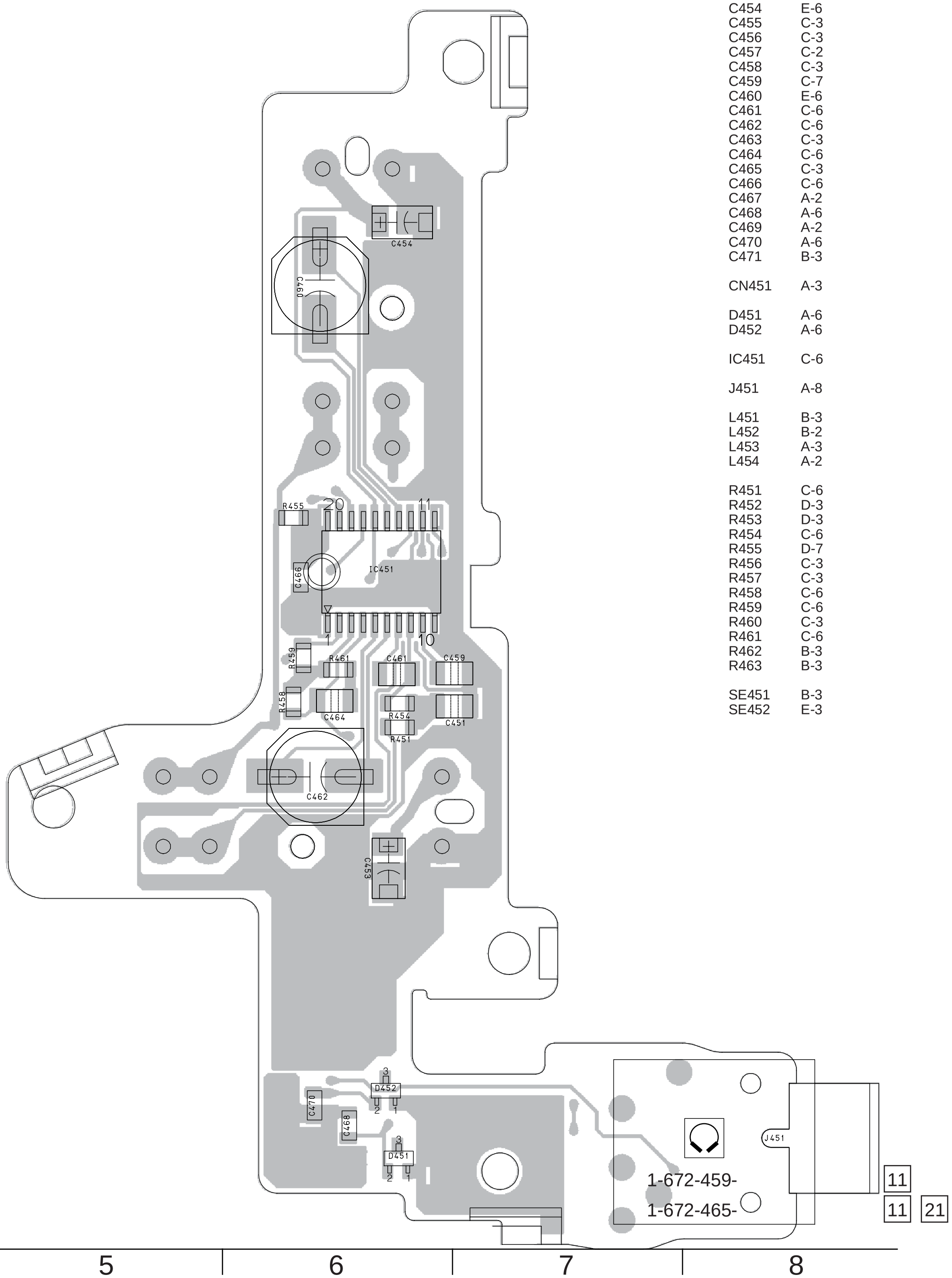






8 9 10 11 12 13 14 15 16 17 18 19 20 21
Q620
LANC ON SWITCH
IC603
LANC IN/OUT
IC603
TL1596CPW-ELM1000
IC604
MODE CONTROL
IC604
S579225PZ-TEB
Q619
SWITCH
TO VC-215 BOARD(8/10)
44
TO VC-215 BOARD(5/10)
30
62
63
X602
32.768kHz
D608
MA111-(K8).SO
D609
1SS367-T3SONY
D610
MA728-(K8).SO
L602
10uH
±10%
• SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y

SE-80/81 BOARD (SIDE A)



Ref.	Location
C451	C-7
C452	D-3
C453	B-7
C454	E-6
C455	C-3
C456	C-3
C457	C-2
C458	C-3
C459	C-7
C460	E-6
C461	C-6
C462	C-6
C463	C-3
C464	C-6
C465	C-3
C466	C-6
C467	A-2
C468	A-6
C469	A-2
C470	A-6
C471	B-3
CN451	A-3
D451	A-6
D452	A-6
IC451	C-6
J451	A-8
L451	B-3
L452	B-2
L453	A-3
L454	A-2
R451	C-6
R452	D-3
R453	D-3
R454	C-6
R455	D-7
R456	C-3
R457	C-3
R458	C-6
R459	C-6
R460	C-3
R461	C-6
R462	B-3
R463	B-3
SE451	B-3
SE452	E-3

• For Printed Wiring Boards.

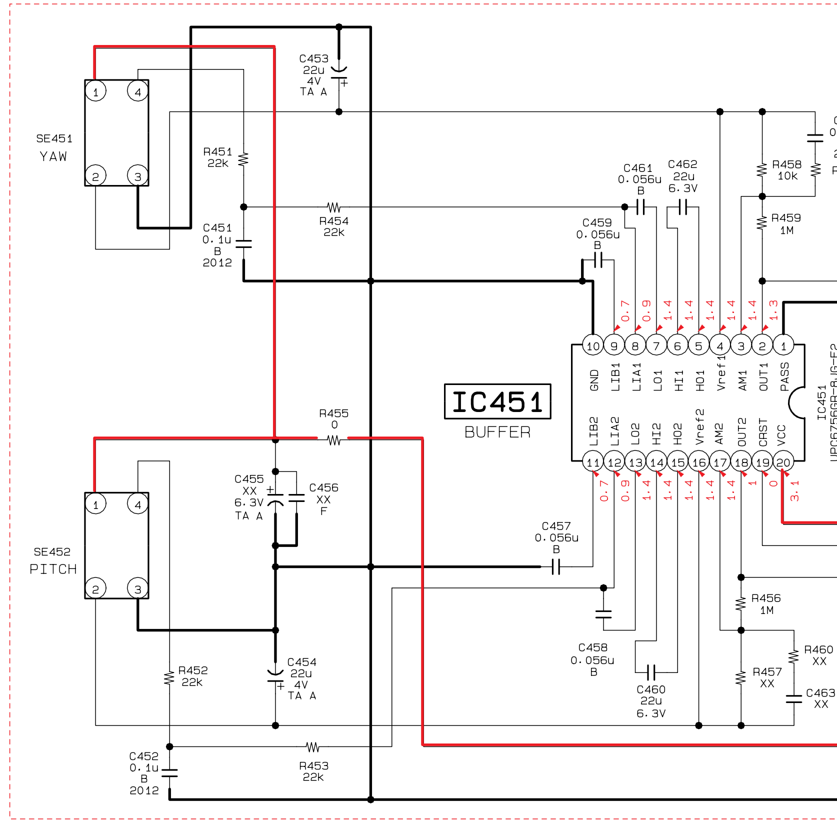
SE-80 BOARD (TR716 ONLY)
SE-81 BOARD (TRV MODEL)

STEADY SHOT

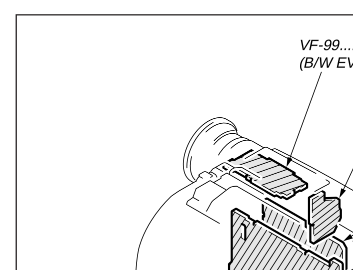
–REF. NO. : SE-80 BOARD : 4, 000. SE-81 BORAD : 9, 000 SERIES–
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode

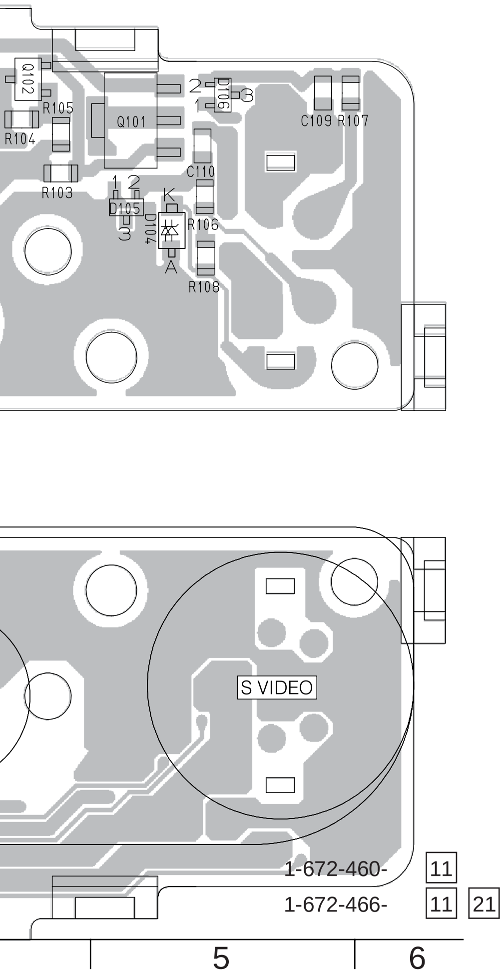
• SIGN

REC
PB



09





PJ-90/91 BOARD

C101	D-4
C102	D-3
C103	C-3
C104	C-3
C105	D-1
C106	D-2
C107	C-1
C108	D-1
C109	D-5
C110	C-5
C111	C-1
CN101	D-2
D101	D-1
D102	C-3
D103	C-3
D104	C-5
D105	C-5
D106	D-5
J101	B-3
L101	D-3
L102	C-3
L103	D-2
L104	C-2
Q101	D-5
Q102	D-4
R101	C-4
R102	D-4
R103	C-4
R104	D-4
R105	D-4
R106	C-5
R107	D-5
R108	C-5
R109	C-3
R110	C-2

PJ-90 BOARD (TR MODEL)
PJ-91 BOARD (TRV MODEL)

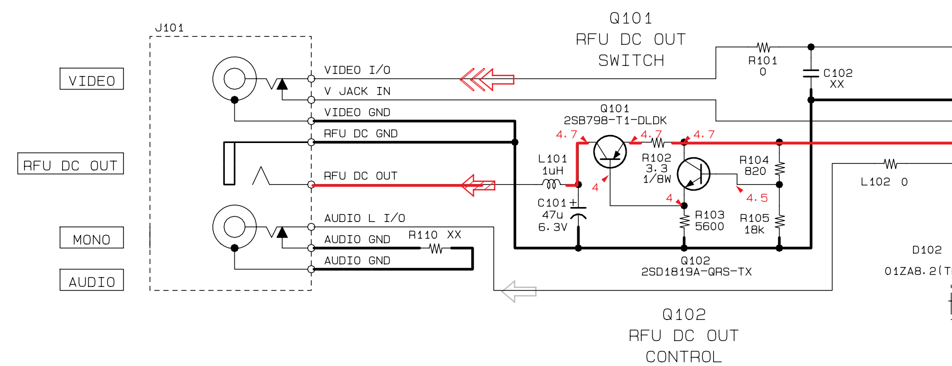
AV OUT

-REF. NO. : PJ-90 BOARD:4,000. PJ-91 BOARD:9,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode

• SIGNAL PATH

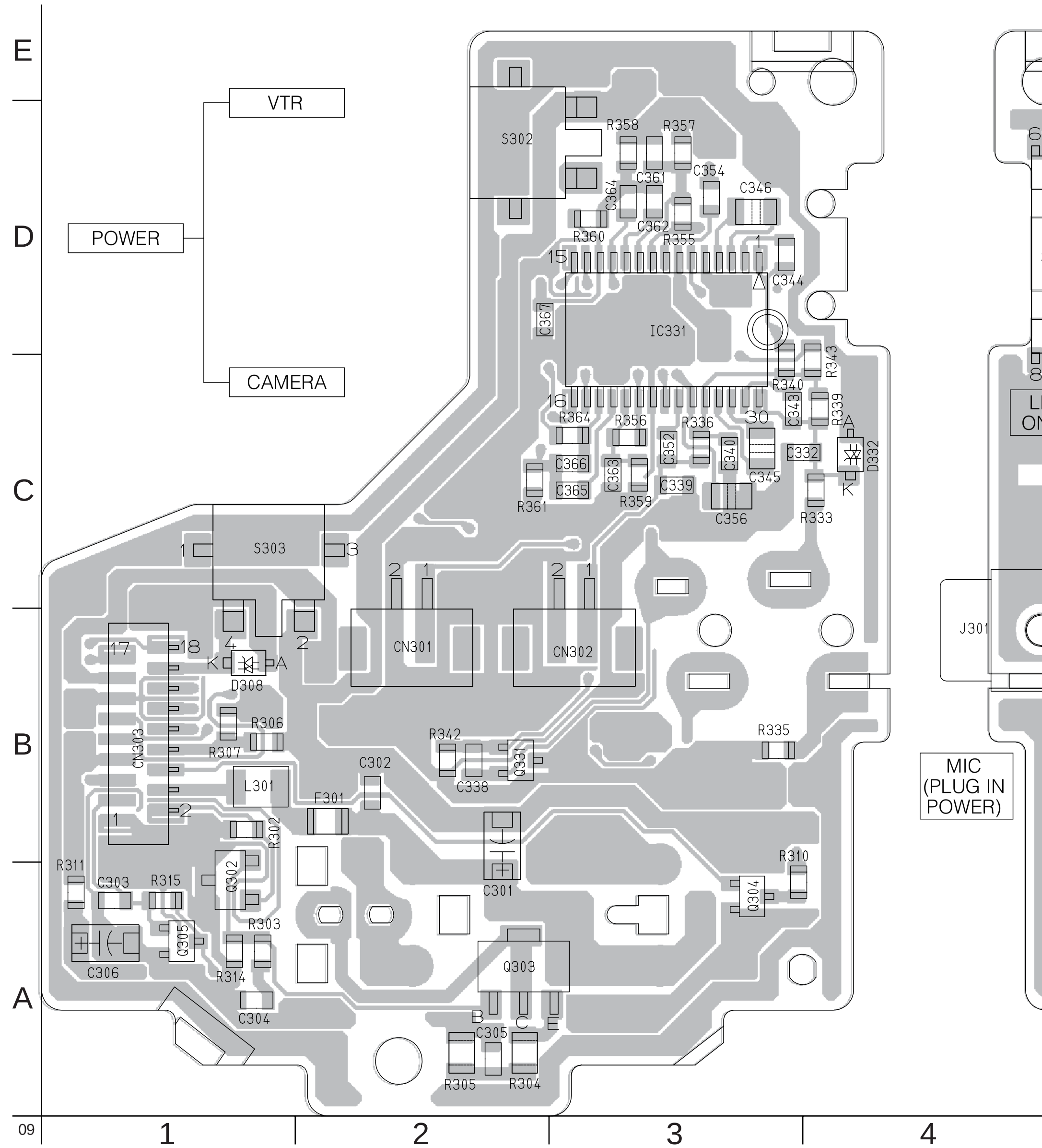
	VIDEO S[...]	
	CHROMA	Y
PB		

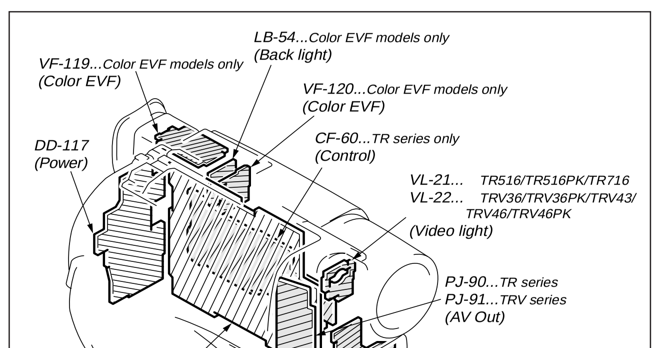
TRV MDOEL:CCD-TRV16/TRV1[...]
TR MODEL:CCD-TR315/TR416[...]



09

MA-345/346 BOARD (SIDE B)

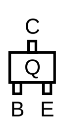


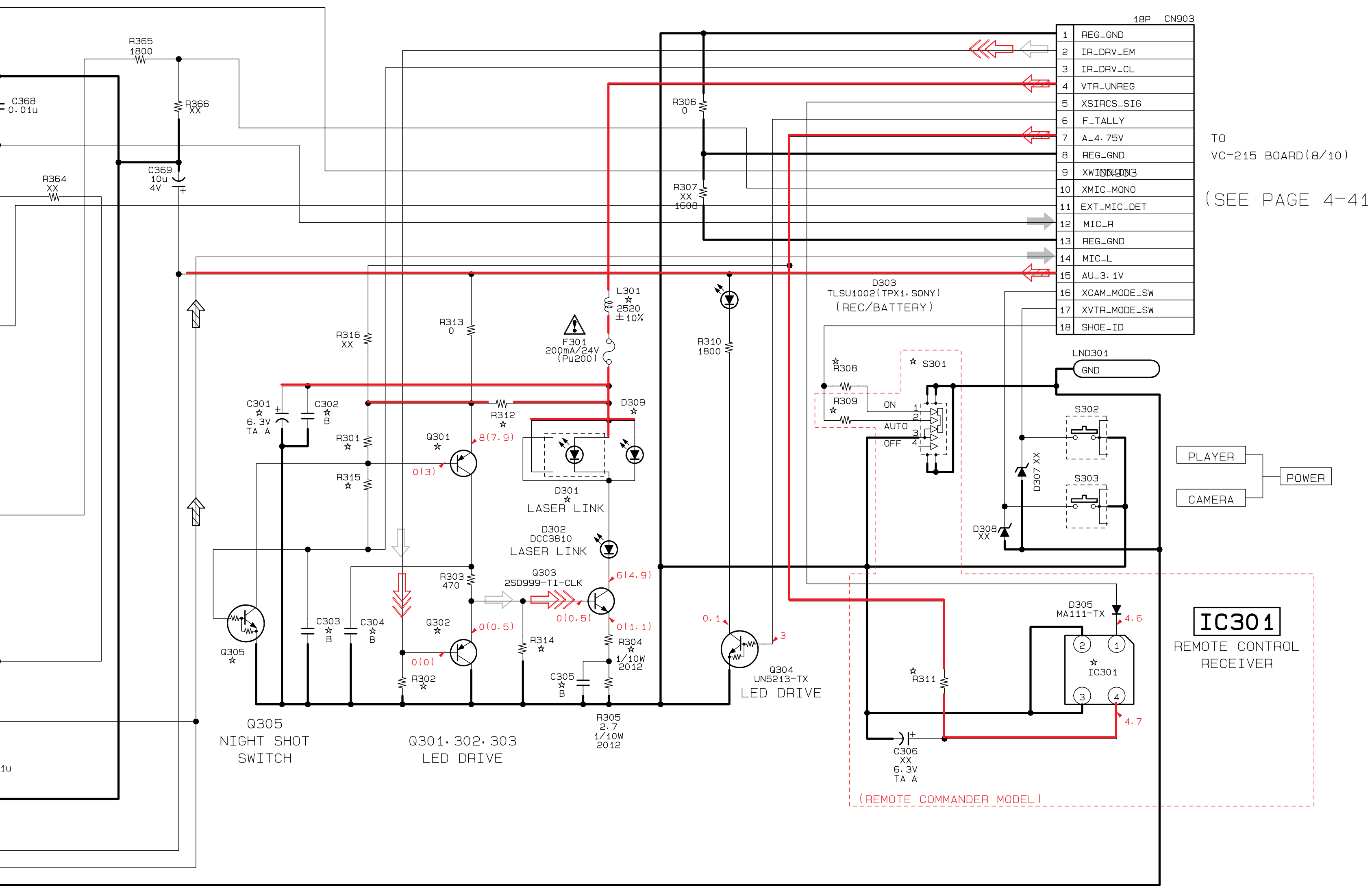


- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor





T TABLE

IR TRANSMITTER	EXCEPT TRANSMITTER	REMOTE COMMANDER
4.7u	XX	XX
0.1u	XX	XX
0.1u	XX	XX
0.1u	XX	XX
0.1u	XX	XX
DCR2810	XX	XX
XX	XX	MA111-(K8).SO
XX	CL-310IRS-X-TU	CL-310IRS-X-TU -EXCEPT(TRV43/TRV46/TRV46PK)
AN2984FH-EB	AN2984FH-EB	RS-180-T
10uH	0	0 -EXCEPT(TRV43/TRV46/TRV46PK)
2SB1218A-QRS-TX	UN5110-QRS-TX	UN5110-QRS-TX -EXCEPT(TRV43/TRV46/TRV46PK)
2SA1226-T1E4	XX	XX
XX	UN5213-TX	UN5213-TX -EXCEPT(TRV43/TRV46/TRV46PK)
1500	XX	XX
120	XX	XX
6.8	5.6	5.6 -EXCEPT(TRV43/TRV46/TRV46PK)
22k	0	22k
XX	XX	150k
47k	0	0
0	XX	XX

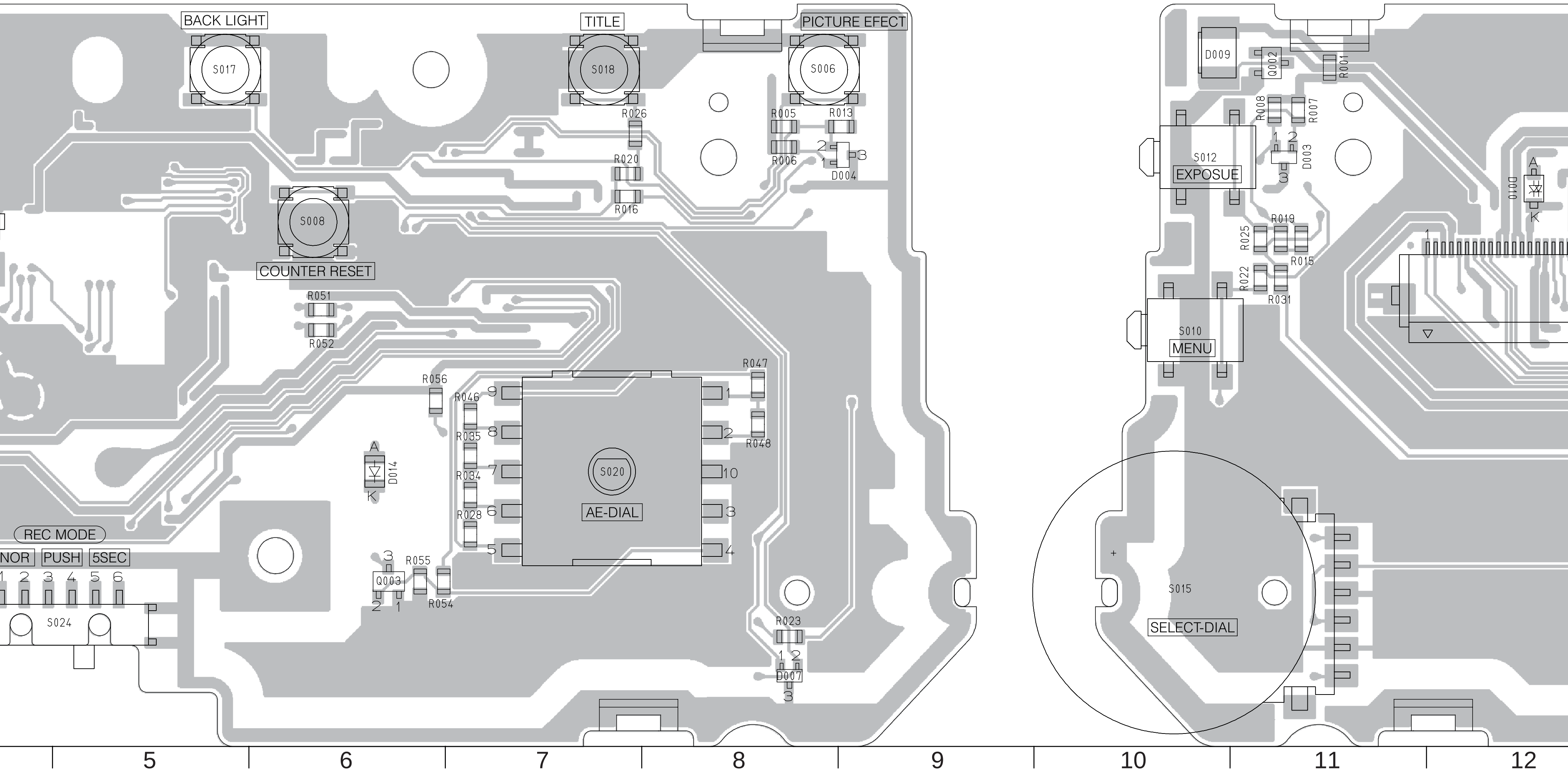
• SIGNAL PATH

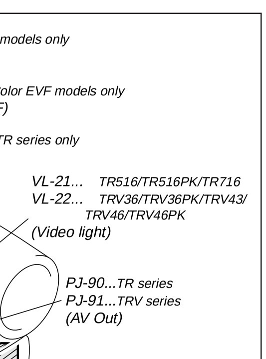
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡ (gray)
PB			⇨⇨ (red)	⇨ (white)

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifies par une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piéce portant le numèro spécifié.

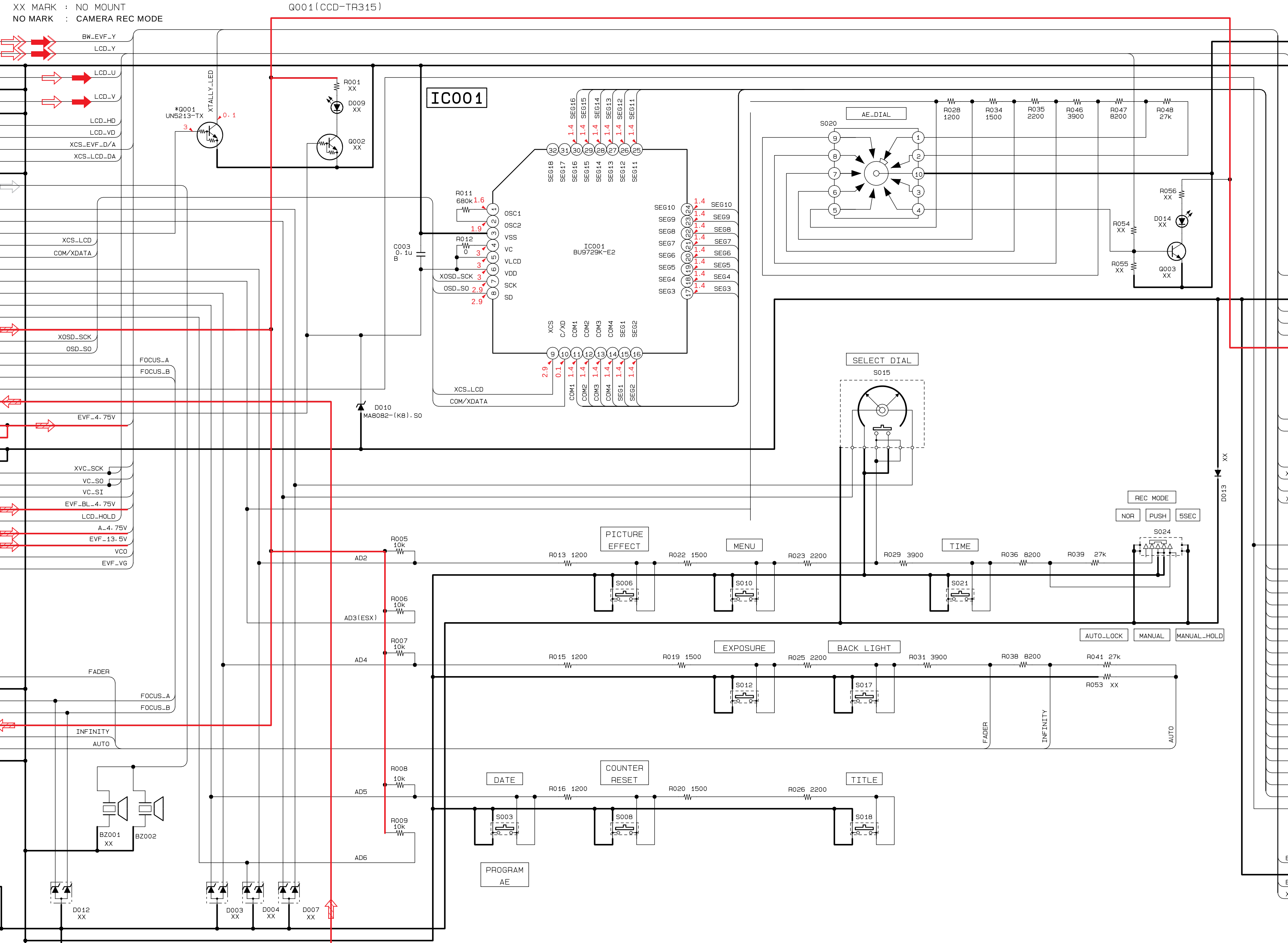
CF-60 BOARD (SIDE A)





CF-60 BOARD (TR MODEL) CONTROL

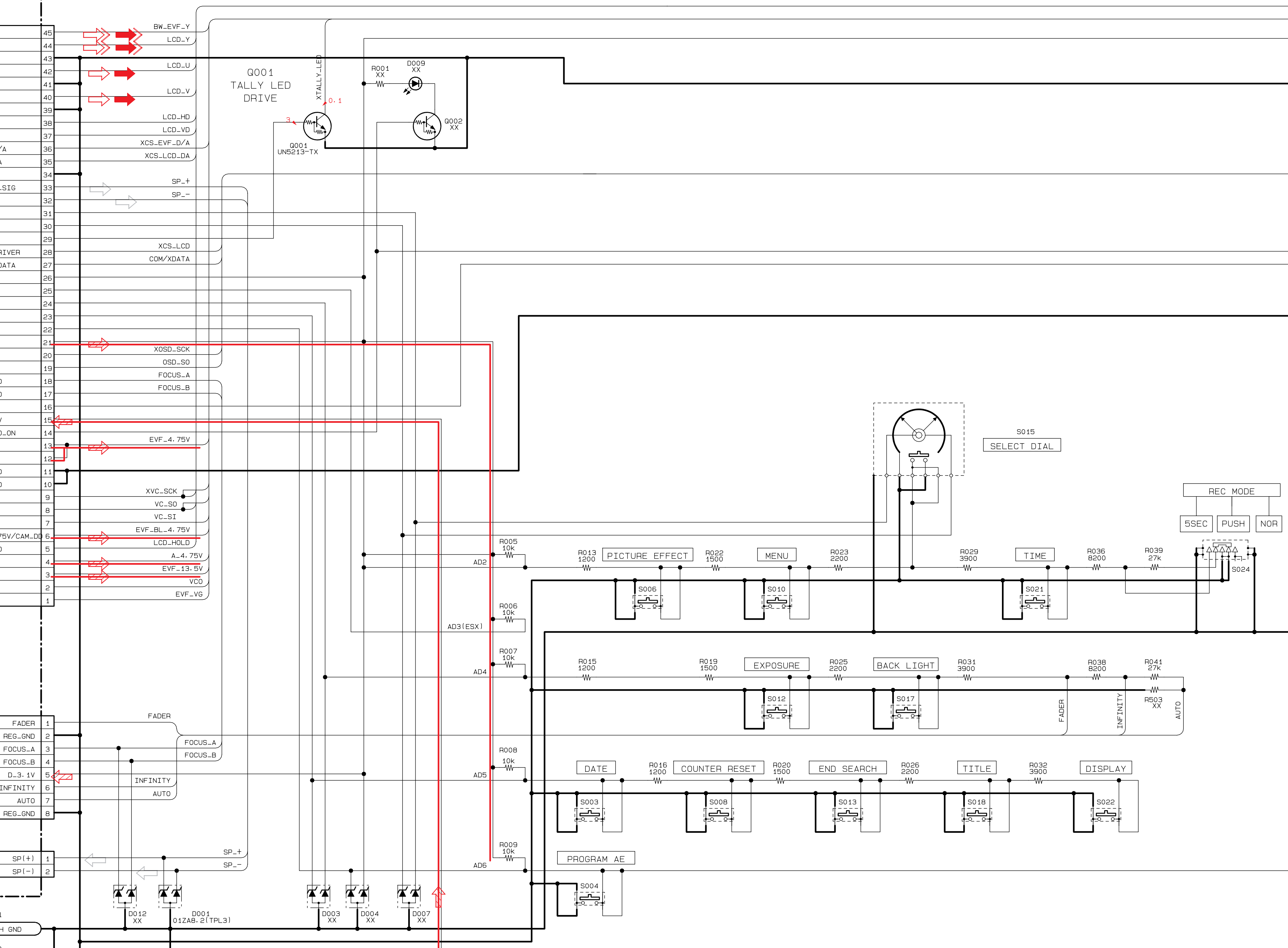
-REF. NO. : 4,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC MODE



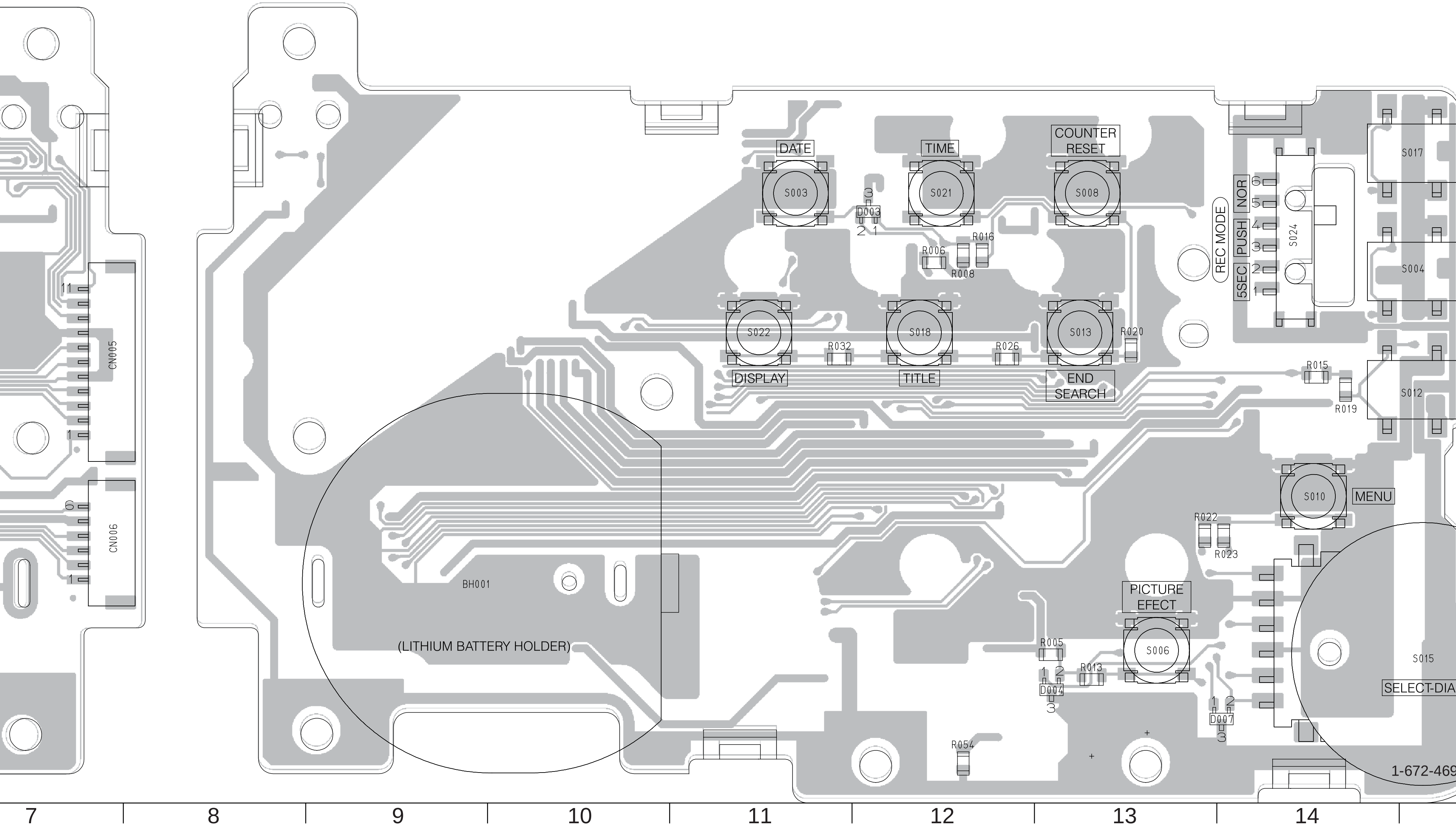
CF-61 BOARD (TRV MODEL)

CONTROL

-REF.NO.: 9,000 SERIES-
XX MARK : NO MOUNT



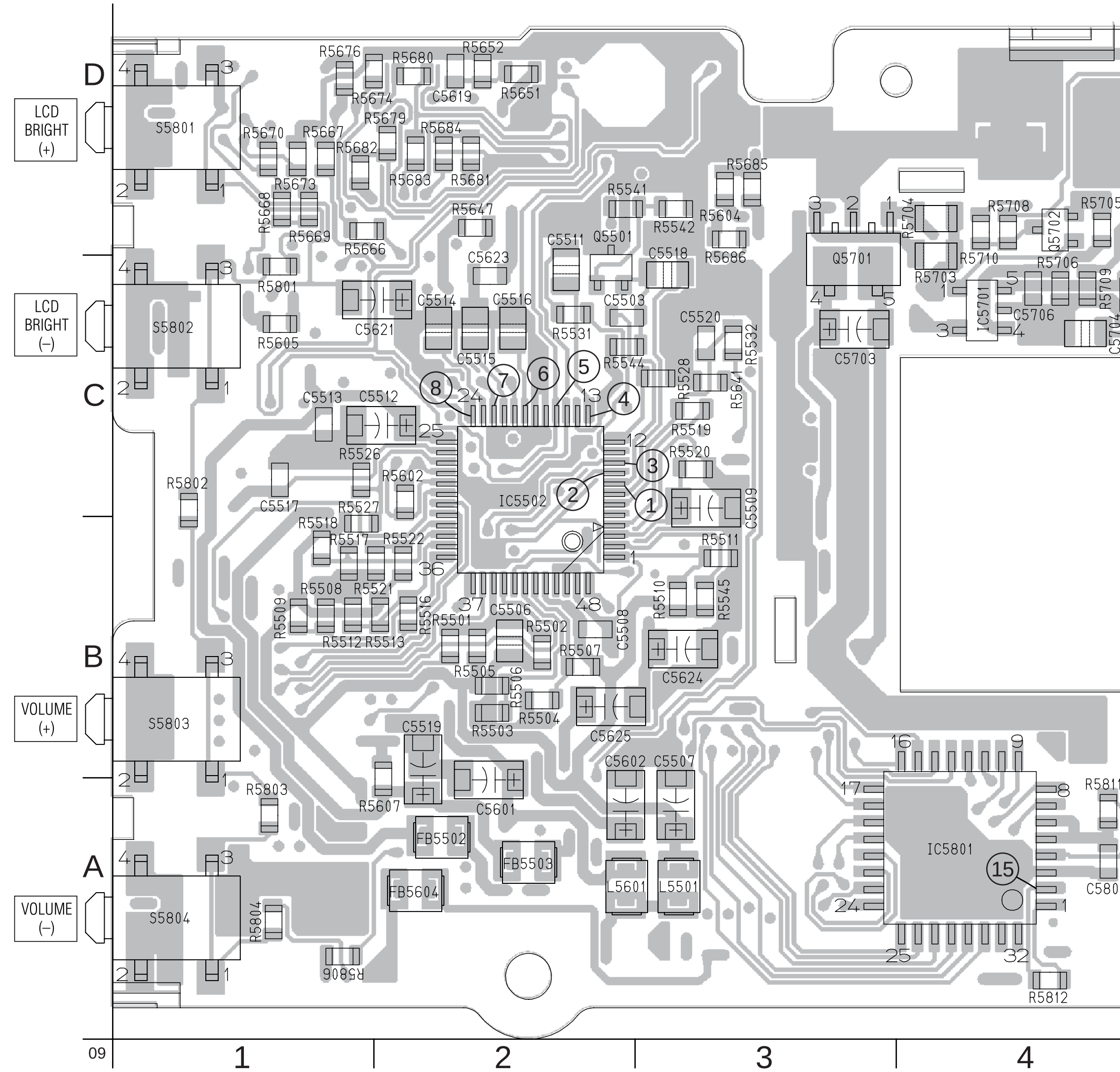
CF-61 BOARD (SIDE A)

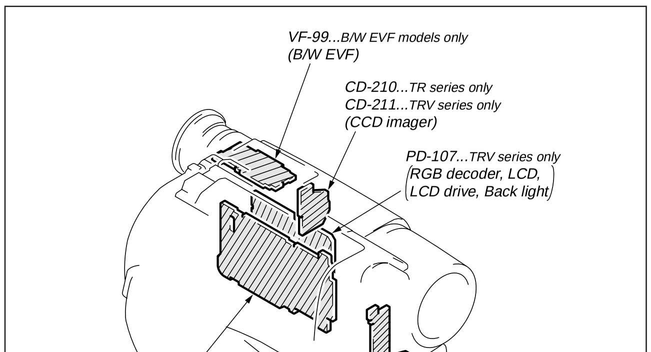


PD-107 BOARD

Ref.	Location
C5501	B-10
C5502	B-10
C5503	C-2
C5504	A-10
C5505	A-10
C5506	B-2
C5507	A-3
C5508	B-2
C5509	C-3
C5511	C-2
C5512	C-2
C5513	C-1
C5514	C-2
C5515	C-2
C5516	C-2
C5517	C-1
C5518	C-3
C5519	B-2
C5520	C-3
C5601	A-2
C5602	A-2
C5603	B-10
C5604	C-9
C5605	B-9
C5607	B-9
C5608	C-9
C5609	B-10
C5610	C-9
C5612	C-10
C5616	B-9
C5618	D-9
C5619	D-2
C5620	D-10
C5621	C-2
C5622	C-11
C5623	C-2
C5624	B-3
C5625	B-2
C5633	C-9
C5701	C-8
C5702	C-8
C5703	C-3
C5704	C-4
C5705	C-6
C5706	C-4
C5801	A-4
CN5501	D-9
CN5601	D-10
CN5701	D-6
CN5801	A-8
CN5802	A-7
CN5803	A-8
CN5804	A-10
CN5805	A-6
D5601	B-10
D5603	B-10
D5604	C-10
D5605	C-9
D5701	A-5
D5702	A-5
D5703	D-5
D5704	D-4
FB5502	A-2
FB5503	A-2
FB5504	A-2
FB5603	A-9
IC5501	B-10
IC5502	C-2
IC5601	C-9
IC5602	C-8
IC5701	C-4
IC5801	A-4
L5501	A-3
L5601	A-2
L5605	C-9
L5701	C-7
Q5501	C-2
Q5601	B-9
Q5602	B-9
Q5605	C-8
Q5606	C-9
Q5607	C-9
Q5608	C-8
Q5701	C-3
Q5702	D-4
R5501	B-2
R5502	B-2
R5503	B-2
R5504	B-2
R5505	B-2
R5506	B-2
R5507	B-2
R5508	B-1
R5509	B-1
R5510	B-3
R5511	B-3
R5512	B-1
R5513	B-2
R5516	B-2
R5517	B-1
R5518	B-1
R5519	C-3
R5520	C-3
R5521	B-2
R5522	B-2
R5526	C-1
R5527	B-1
R5528	C-3
R5531	C-2
R5532	C-3
R5537	D-8
R5541	D-2
R5542	D-3
R5544	C-2
R5545	B-3
R5602	C-2
R5603	D-8
R5604	D-3
R5605	C-1
R5606	C-10
R5607	A-2
R5608	B-9
R5608	C-10
R5610	B-10
R5612	B-9
R5613	B-9
R5615	B-9
R5616	B-10
R5617	B-10
R5619	B-10
R5620	B-9
R5621	C-9
R5622	B-8
R5623	B-8
R5624	B-9
R5625	C-10
R5626	C-9
R5627	C-10
R5628	C-10
R5629	B-8
R5630	C-9
R5631	B-9
R5632	B-10
R5637	C-10
R5640	C-9
R5641	C-3
R5643	C-9
R5644	C-9
R5646	C-10
R5647	D-2
R5648	D-10
R5651	D-2
R5652	D-2
R5653	D-9
R5654	D-9
R5657	D-9
R5658	D-9
R5659	D-10
R5660	D-10
R5661	D-10
R5663	C-9
R5664	D-10
R5665	D-10
R5666	D-1
R5667	D-1
R5668	D-1
R5669	D-1
R5670	D-1
R5671	D-9
R5672	D-9
R5673	D-1
R5674	D-1
R5676	D-1
R5678	D-9
R5679	D-2
R5680	D-2
R5681	D-2
R5682	D-1
R5683	D-2
R5684	D-2
R5685	D-3
R5686	D-3
R5688	C-9
R5692	C-9
R5693	C-9
R5694	C-9
R5695	C-9
R5696	D-10
R5697	C-11
R5698	D-9
R5701	A-5
R5702	A-5
R5703	C-4
R5704	D-4
R5705	D-4
R5706	C-4
R5707	C-4
R5708	D-4
R5709	C-4
R5710	D-4
R5801	C-1
R5802	C-1
R5803	A-1
R5804	A-1
R5805	A-7
R5806	A-1
R5807	B-7
R5809	B-7
R5810	B-9
R5811	A-4
R5812	A-4
S5801	D-1
S5802	C-1
S5803	B-1
S5804	A-1
T5701	B-7

PD-107 BOARD (SIDE B)

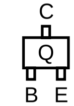


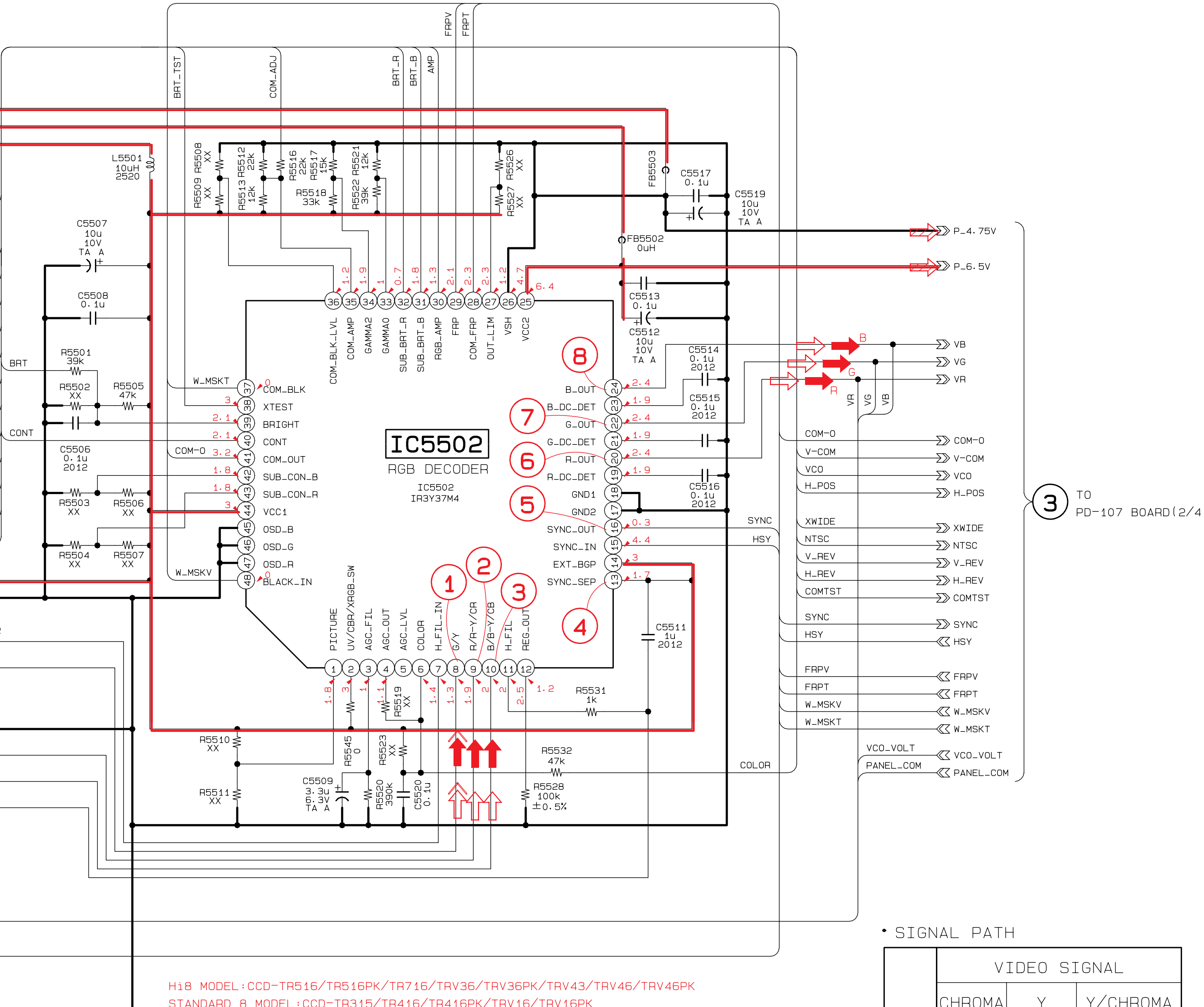


- **For Printed Wiring Boards.**
- This board is four-layer print board
  layers 2 to 3 have not been include

There are few cases that the part i
printed on this diagram.

- Chip transistor



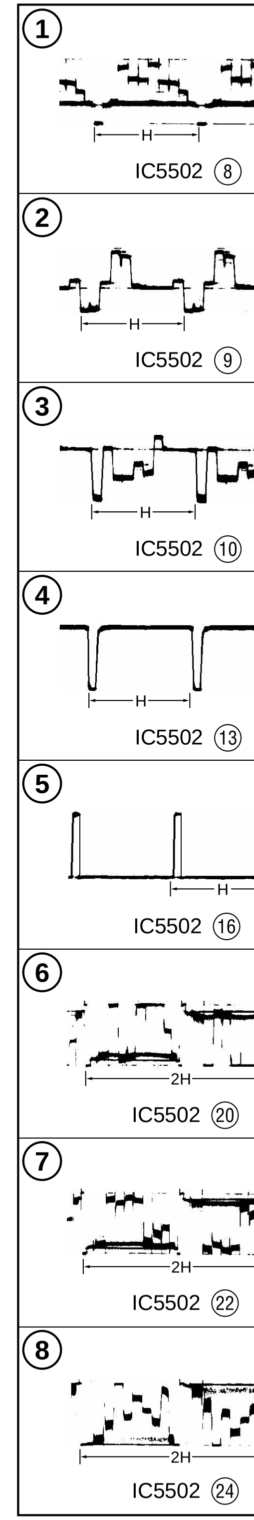


H18 MODEL:CCD-TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK
STANDARD 8 MODEL:CCD-TR315/TR416/TR416PK/TRV16/TRV16PK
TRV MODEL:CCD-TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK
TR MODEL:CCD-TR315/TR416/TR416PK/TR516/TR516PK/TR716

• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡ (solid)	➡ (solid, double)	
PB	⇨ (outline)	⇨ (outline, double)	

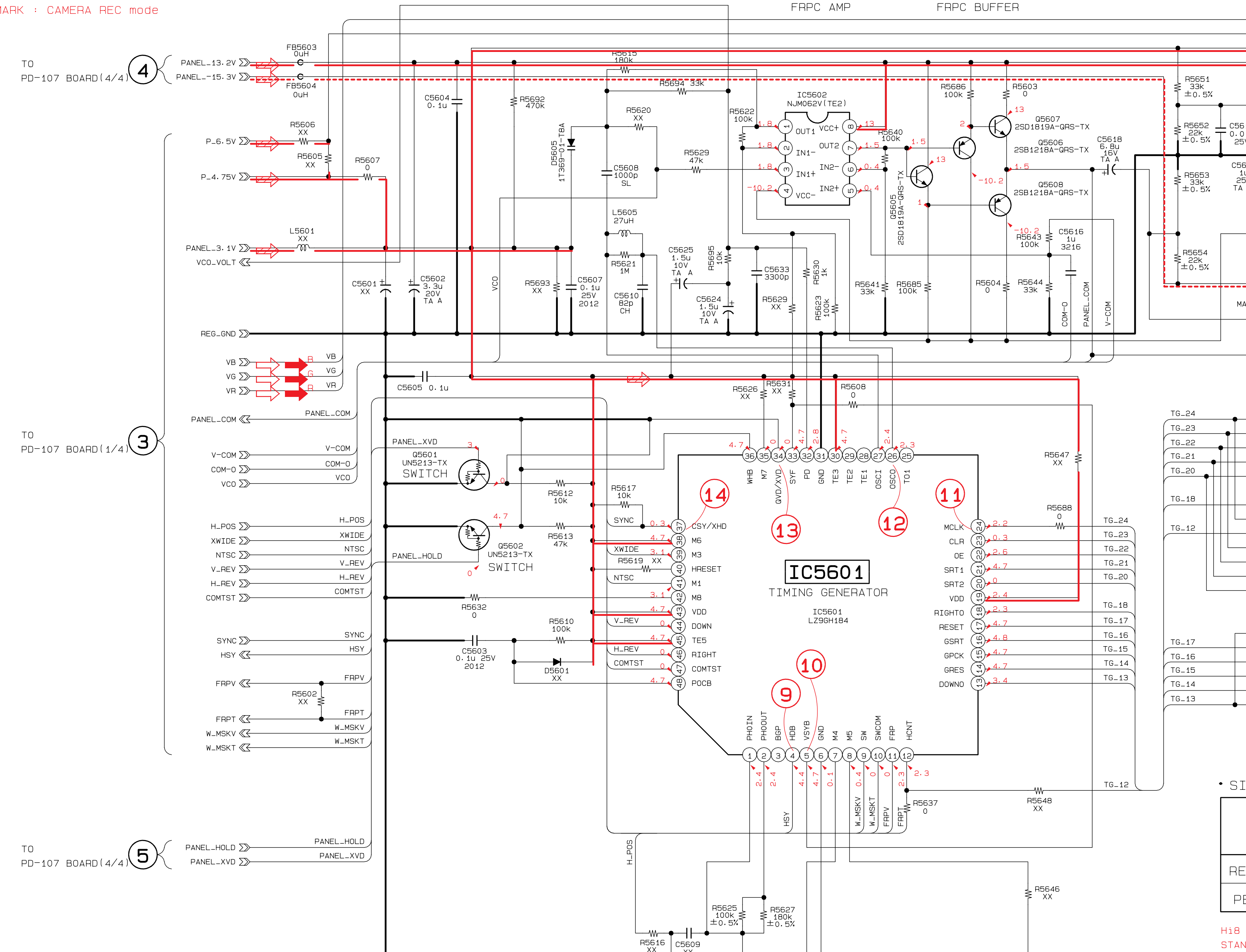
CAMERA REC

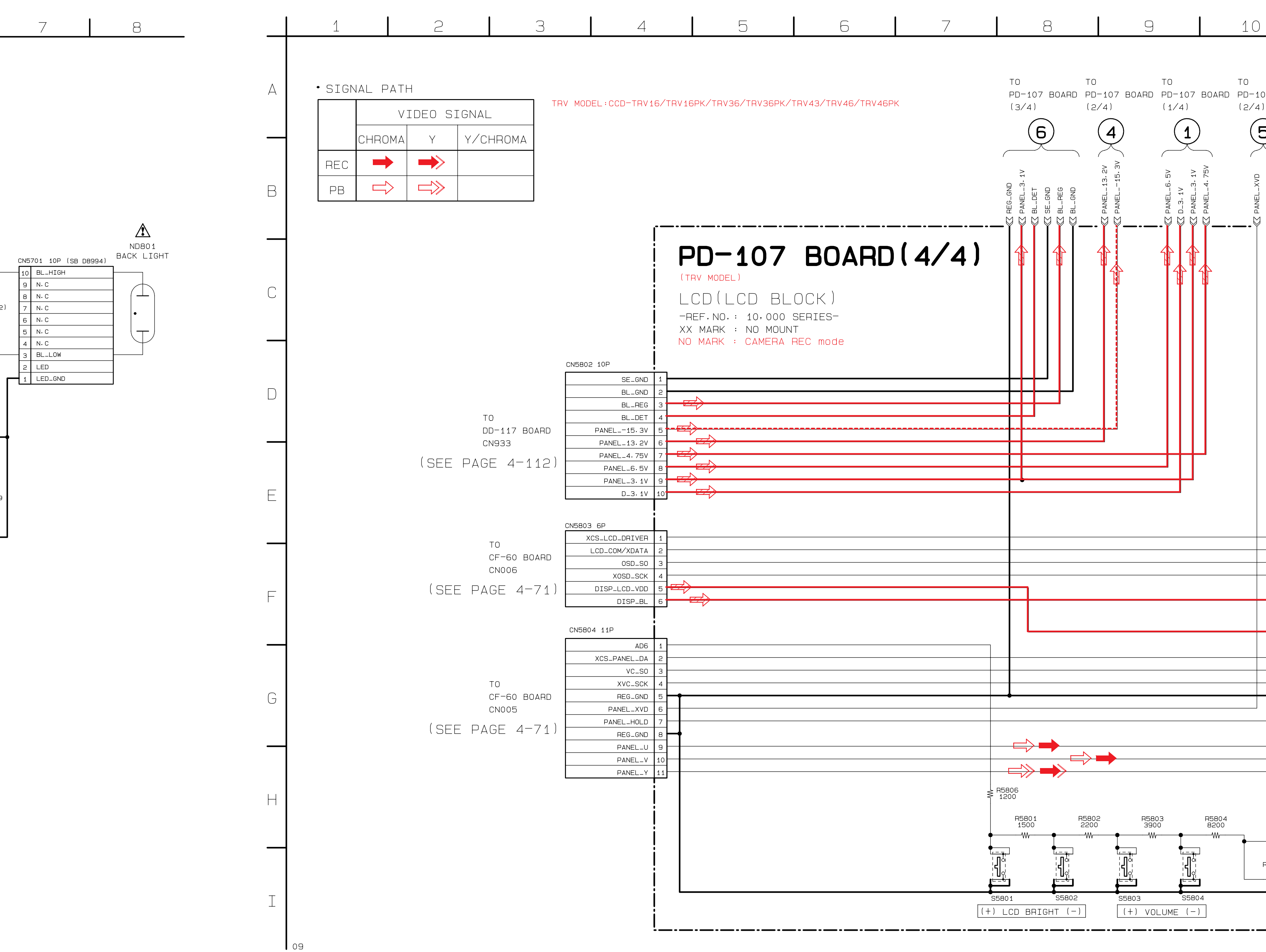


PD-107 BOARD(2/4) (TRV MODEL)

LCD DRIVE (TG BLOCK)

-REF. NO. : 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode





SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
TRV MODEL : CCD-TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK
PD-107 BOARD(4/4)
(TRV MODEL)
LCD(LCD BLOCK)
-REF. NO. : 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
TO PD-107 BOARD (3/4)
TO PD-107 BOARD (2/4)
TO PD-107 BOARD (1/4)
TO PD-107 BOARD (2/4)
REG_GND
PANEL_3.1V
BL_DET
SE_GND
BL_REG
BL_GND
PANEL_13.2V
PANEL_-15.3V
PANEL_6.5V
D_3.1V
PANEL_4.75V
PANEL_XVD
ND801
BACK LIGHT
CN5701 10P (SB D8994)
BL_HIGH
N.C
BL_LOW
LED
LED_GND
CN5802 10P
TO
DD-117 BOARD
CN933
(SEE PAGE 4-112)
CN5803 6P
XCS_LCD_DRIVER
LCD_COM/XDATA
OSD_SO
XOSD_SCK
DISP_LCD_VDD
DISP_BL
TO
CF-60 BOARD
CN006
(SEE PAGE 4-71)
CN5804 11P
AD6
XCS_PANEL_DA
VC_SO
XVC_SCK
PANEL_XVD
PANEL_HOLD
PANEL_U
PANEL_V
PANEL_Y
TO
CF-60 BOARD
CN005
(SEE PAGE 4-71)
R5806
1200
R5801
1500
R5802
2200
R5803
3900
R5804
8200
S5801
S5802
S5803
S5804
(+) LCD BRIGHT (-)
(+) VOLUME (-)
09

99 BOARD (TYPE 2/TYPE 3)

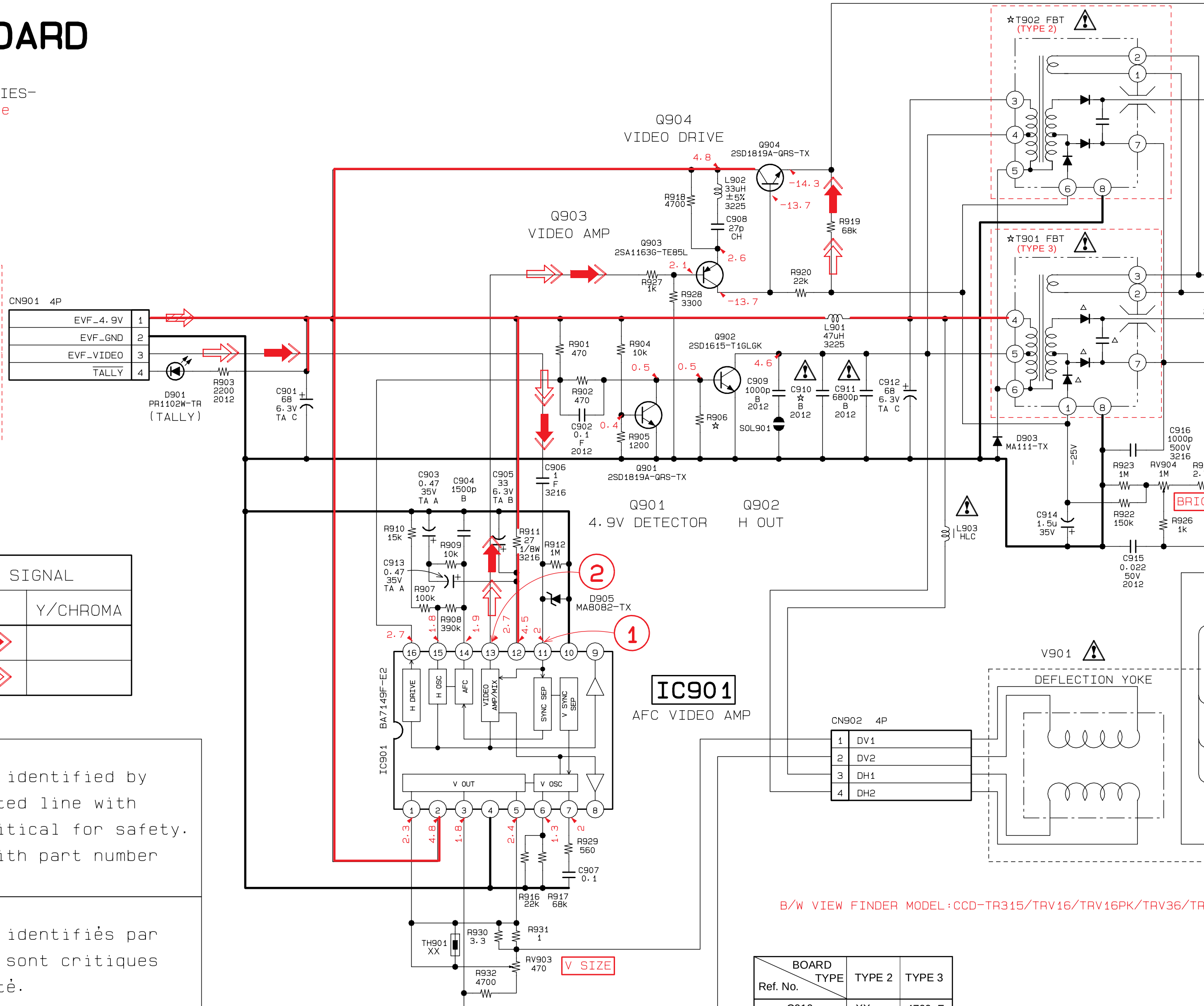
01	D-1	R919	B-2
02	C-1	R920	C-2
03	C-3	R921	A-2
04	C-3	R922	A-3
05	D-1	R923	A-1
06	D-3	R924	B-2
07	D-3	R925	B-2
08	C-2	R926	A-2
09	B-3	R927	C-3
10	B-1	R928	C-3
11	B-1	R929	D-3
12	B-1	R930	B-3
13	D-3	R931	B-3
14	A-1	R932	B-3
15	A-2		
16	B-2	RV903	A-3
		RV904	A-3
901	D-2		
902	C-3	T901	B-3
		T902	B-3
01	D-3		
03	A-2	TH901	C-3
01	D-3	W901	B-3
1	C-3		
2	C-2		
3	A-3		
01	C-1		
02	C-1		
03	C-2		
04	C-2		
01	C-1		
02	C-1		
03	D-3		
04	C-1		
05	C-1		
06	C-1		
07	C-3		
08	C-3		
09	C-3		
10	C-3		
11	D-1		
12	D-3		
13	C-3		
14	C-3		
15	C-3		
16	D-3		
17	D-3		
18	C-2		

VF-99 BOARD

B/W EVF

-REF. NO. : 10,000 SERIES-

NO MARK : REC/PB mode



• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡ (solid)	
PB		⇨ (outline)	

BOARD TYPE / Ref. No.	TYPE 2	TYPE 3
C910	XX	4700pF
R906	1.5k	1.5k
R921	18	6.8
T901	XX	○
T902	○	XX

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

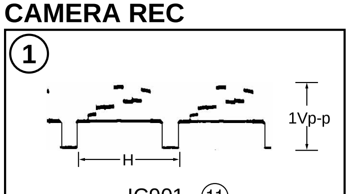
Note: Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

models only

.TR series only
.TRV series only
ager)

PD-107...TRV series only
(RGB decoder, LCD, LCD drive, Back light)

VF-99 BOARD
CAMERA REC



VF-119 BOARD

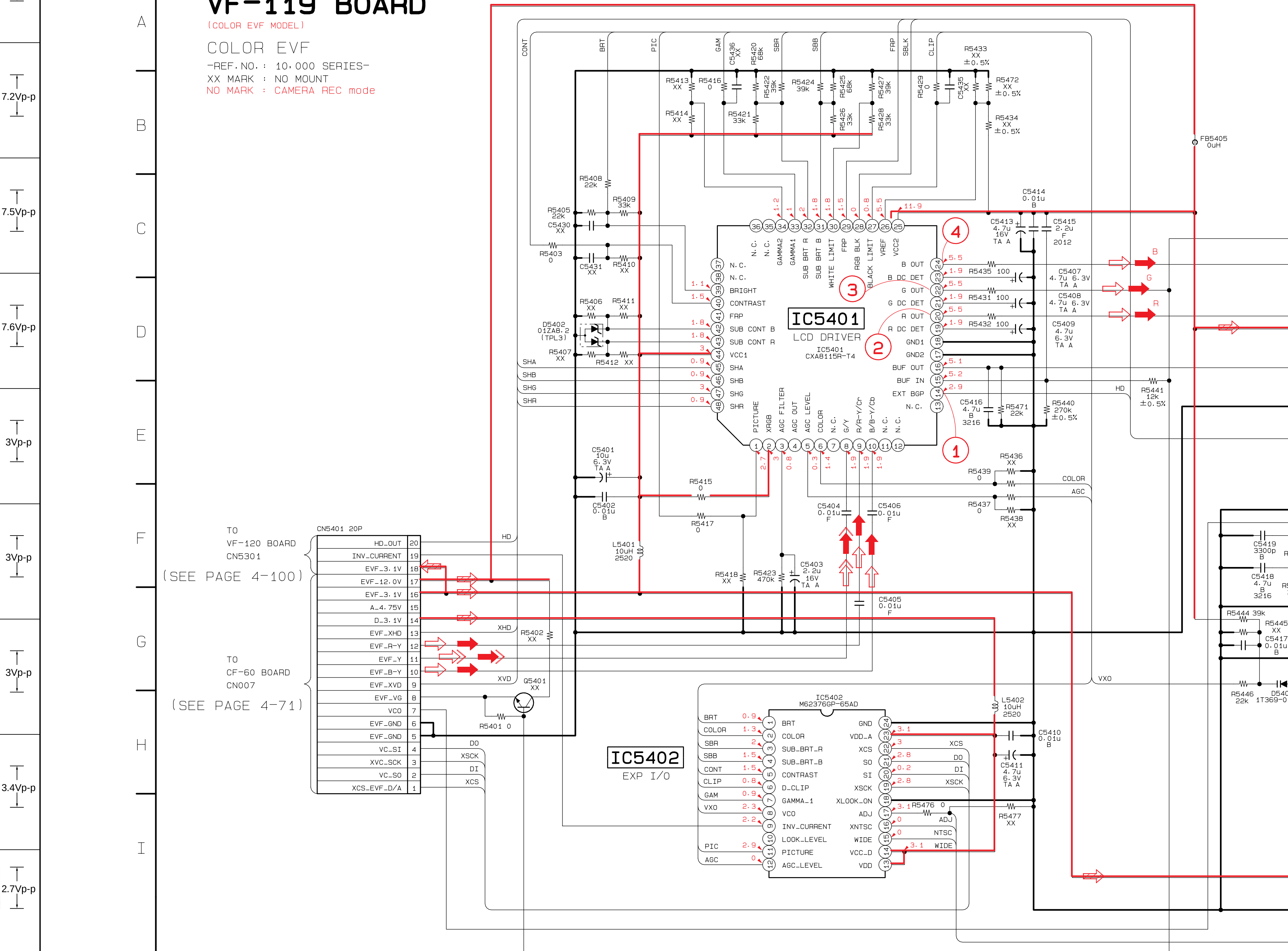
(COLOR EVF MODEL)

COLOR EVF

-REF.NO.: 10,000 SERIES-

XX MARK : NO MOUNT

NO MARK : CAMERA REC mode



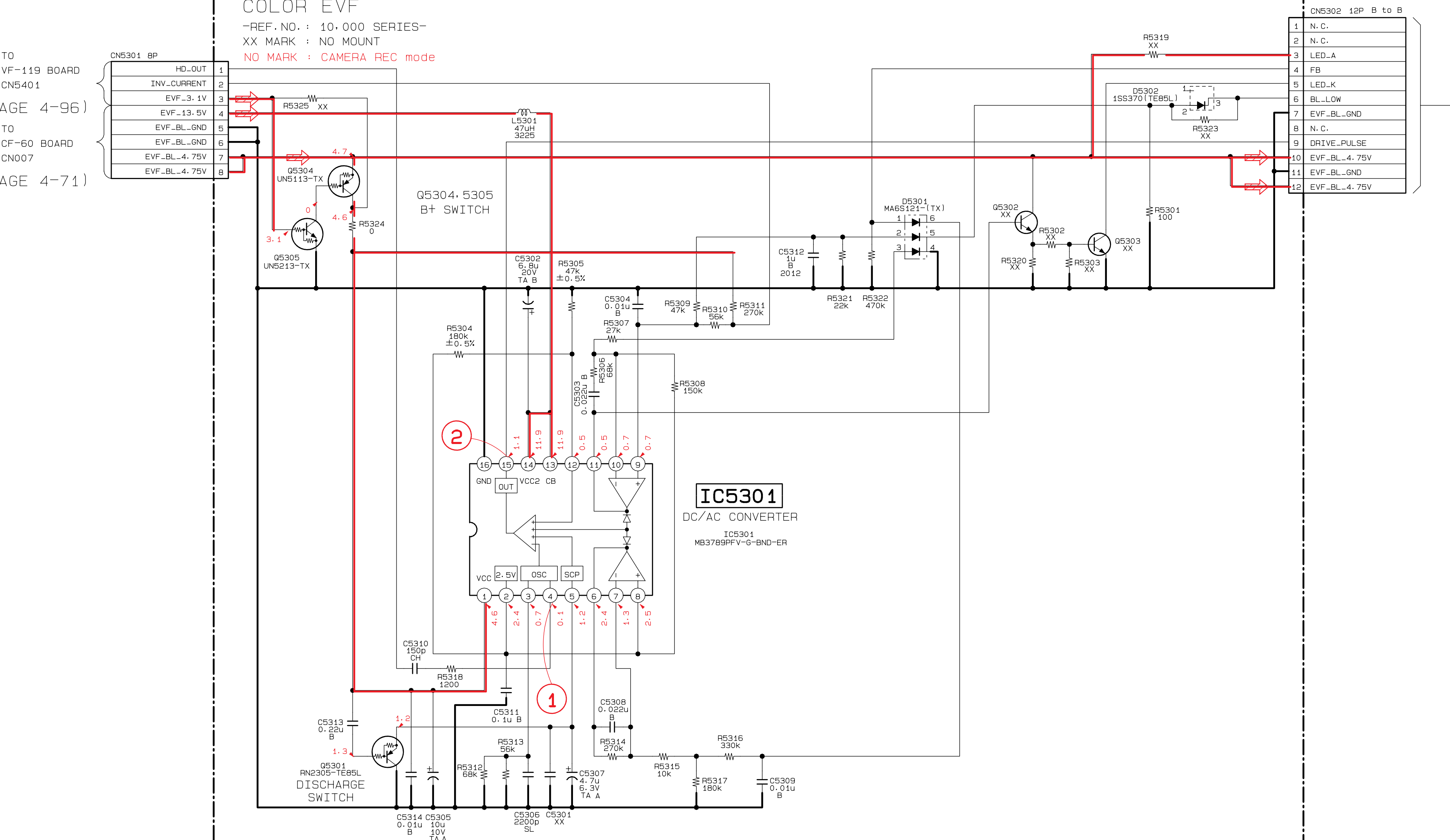
VF-120 BOARD (COLOR EVF MODEL)

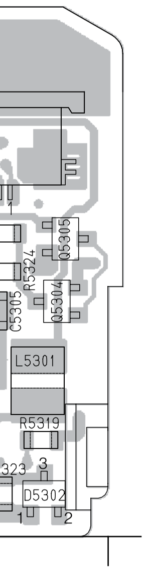
COLOR EVF

-REF. NO. : 10,000 SERIES-

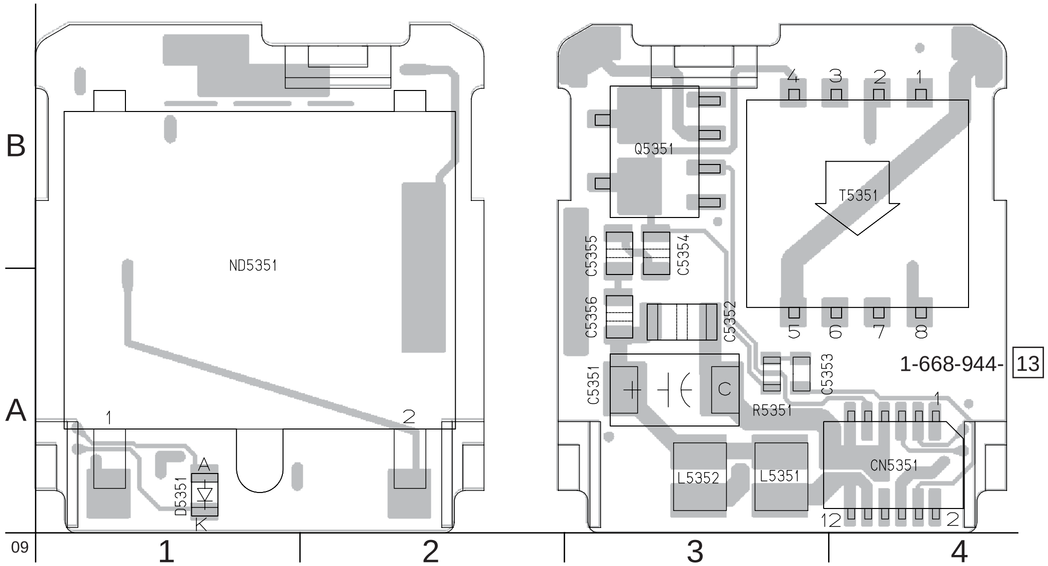
XX MARK : NO MOUNT

NO MARK : CAMERA REC mode





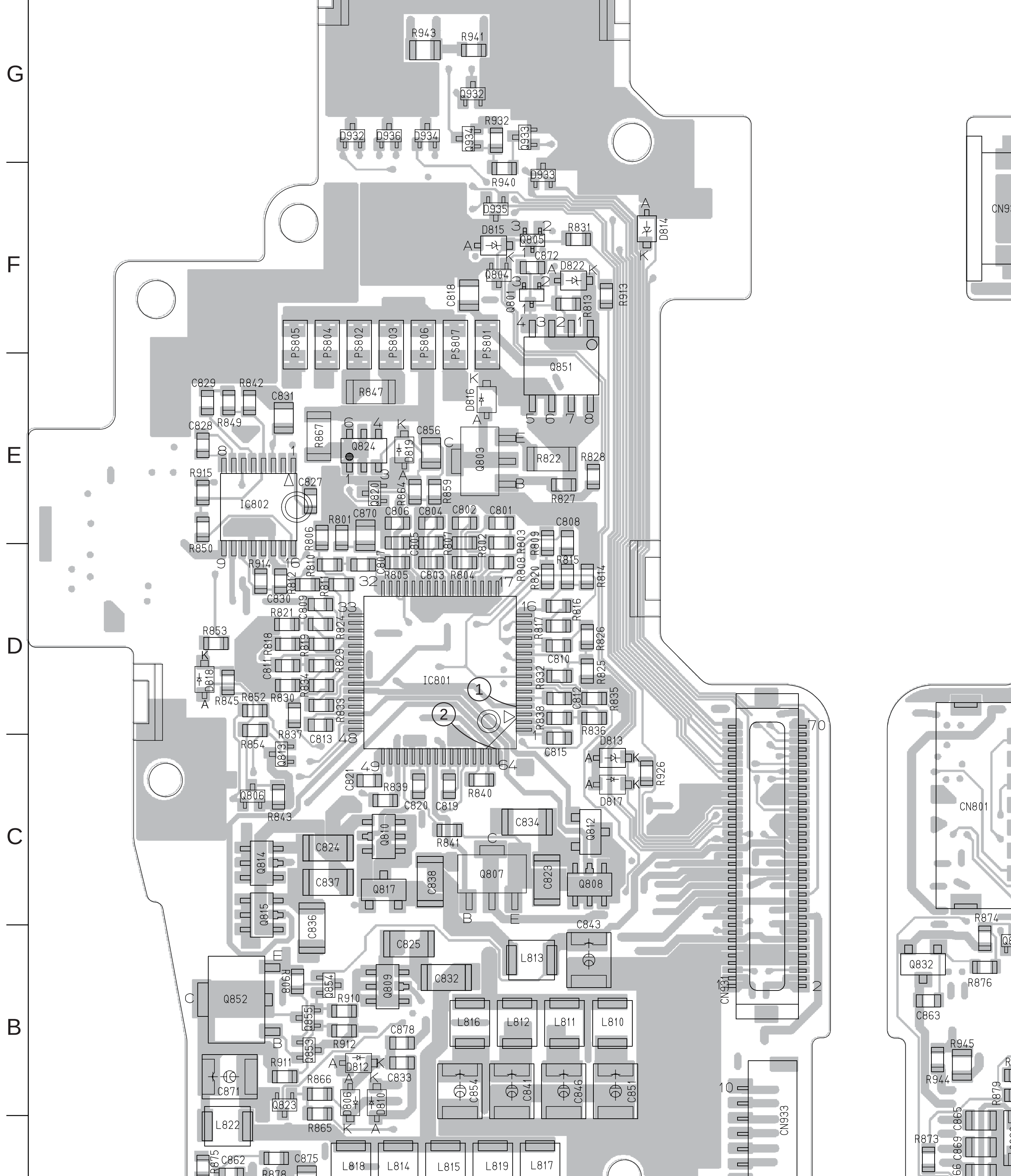
A-4
A-2
A-1
A-3
A-4
A-3
A-3
A-3
A-3
A-3
A-3
B-3
B-3
B-3
A-3
A-3
B-3
B-4
A-4
A-2
A-3
A-3
A-4
A-4
B-4

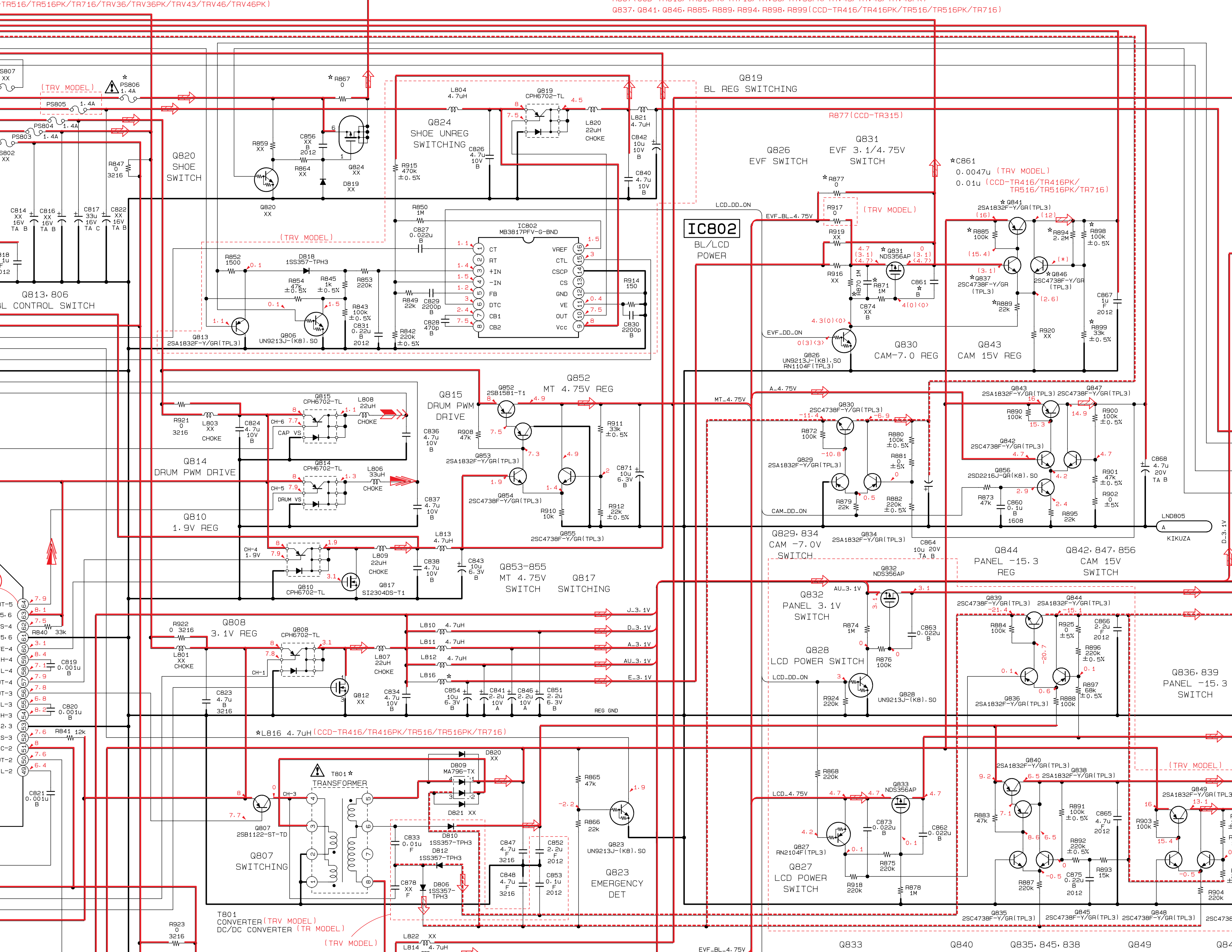


LB-54 BOARD

C5351	A-3
C5352	A-3
C5353	A-3
C5354	B-3
C5355	B-3
C5356	A-3
CN5351	A-4
D5351	A-1
L5351	A-3
L5352	A-3
ND5351	B-1
Q5351	B-3
R5351	A-3
T5351	B-4

C804	E-3	L804	E-9	R826	D-3
C805	E-2	L805	B-7	R827	E-3
C806	E-2	L806	C-8	R828	E-3
C807	D-2	L807	C-6	R829	C-2
C808	E-3	L808	B-8	R829	D-2
C809	D-2	L809	C-7	R830	D-2
C810	D-3	L810	B-4	R831	F-3
C811	D-2	L811	B-3	R832	D-3
C812	D-3	L812	B-3	R833	D-2
C813	D-2	L813	B-3	R834	D-2
C814	E-8	L814	A-2	R835	D-3
C815	C-3	L815	A-3	R836	D-3
C816	E-8	L816	B-3	R837	D-2
C817	E-8	L817	A-3	R838	D-3
C818	F-3	L818	A-2	R840	C-3
C819	C-3	L819	A-3	R841	C-3
C820	C-3	L820	D-8	R842	E-2
C821	C-2	L821	A-6	R843	C-2
C822	E-8	L822	A-2	R844	D-6
C823	C-3			R845	D-2
C824	C-2	LF801	D-6	R846	D-6
C825	B-2			R847	E-2
C826	D-8	PS801	F-3	R849	E-2
C827	E-2	PS802	F-2	R850	E-1
C828	E-1	PS803	F-2	R852	D-2
C829	E-1	PS804	F-2	R853	D-1
C830	D-2	PS805	F-2	R854	D-2
C831	E-2	PS806	F-3	R859	E-3
C832	B-3	PS807	F-3	R864	E-3
C833	B-2			R865	B-2
C834	C-3	Q801	F-3	R866	B-2
C836	B-2	Q803	E-3	R867	E-2
C837	C-2	Q804	F-3	R868	A-1
C838	C-3	Q805	F-3	R870	A-7
C840	D-8	Q806	C-2	R871	A-7
C841	B-3	Q807	C-3	R876	B-6
C842	A-5	Q808	C-3	R877	A-7
C843	B-3	Q809	B-2	R878	A-2
C844	A-3	Q810	C-2	R879	B-6
C846	B-3	Q812	C-3	R880	B-6
C847	B-7	Q813	C-2	R881	B-6
C848	B-7	Q814	C-2	R882	B-6
C849	A-2	Q815	C-2	R883	B-8
C850	A-3	Q817	C-2	R884	B-8
C851	B-4	Q819	D-8	R885	A-7
C852	B-7	Q820	E-2	R887	B-8
C853	B-7	Q823	B-2	R888	B-8
C854	B-3	Q824	E-2	R889	A-7
C855	A-3	Q826	A-7	R890	A-7
C856	E-3	Q827	A-2	R891	A-8
C857	A-2	Q828	B-6	R892	A-8
C860	A-6	Q829	A-6	R893	A-8
C861	A-7	Q830	B-6	R894	A-7
C862	A-2	Q831	A-7	R895	A-6
C863	B-5	Q832	B-5	R896	A-8
C864	B-6	Q833	A-2	R897	A-8
C865	A-5	Q834	B-6	R898	A-6
C866	A-5	Q835	A-8	R899	A-7
C867	A-6	Q836	A-8	R900	A-6
C868	A-6	Q837	A-7	R901	A-6
C869	A-5	Q838	A-8	R902	A-6
C870	E-2	Q839	A-8	R903	A-7
C871	B-2	Q840	A-8	R904	A-8
C872	F-3	Q841	A-7	R905	A-7
C873	A-2	Q842	A-6	R906	A-8
C874	A-7	Q843	A-6	R907	A-8
C875	A-2	Q844	A-8	R908	B-2
C876	D-6	Q845	A-8	R910	B-2
C877	D-6	Q846	A-7	R911	B-2
C878	B-2	Q847	A-6	R912	B-2
CN801	C-5	Q848	A-8	R913	F-4
CN931	C-4	Q849	A-7	R914	D-2
CN933	A-4	Q850	A-8	R915	E-1
CN934	D-9	Q851	E-3	R916	A-7
CN935	G-7	Q852	B-2	R917	A-7
CN936	F-6	Q853	B-2	R918	A-1
		Q854	B-2	R919	A-7
D806	B-2	Q855	B-2	R920	A-7
D809	B-7	Q856	A-6	R921	D-7
D810	B-2	Q932	G-3	R922	D-7
D812	B-2	Q933	G-3	R923	D-7
D813	C-4	Q934	G-3	R924	B-6
D814	F-4			R925	A-8
D815	F-3	R801	E-2	R926	C-4
D816	E-3	R802	E-3	R932	G-3
D817	C-4	R803	E-3	R933	F-6
D818	D-1	R804	D-3	R934	F-6
D819	E-2	R805	D-2	R935	F-6
D820	B-7	R806	E-2	R936	F-6
D821	B-7	R807	E-3	R937	F-6
D822	F-3	R808	D-3	R938	F-6
D932	G-2	R809	E-3	R939	F-6
D933	F-3	R810	D-2	R940	F-3
D934	G-3	R811	D-2	R941	G-3
D935	F-3	R812	D-2	R942	E-8
D936	G-2	R813	F-3	R943	G-3
D938	E-9	R814	D-3	R944	B-5




Q819 BL REG SWITCHING
Q820 SHOE SWITCH
Q824 SHOE UNREG SWITCHING
Q826 EVF SWITCH
Q831 EVF 3.1/4.75V SWITCH
IC802 BL/LCD POWER
Q813, 806 BL CONTROL SWITCH
Q830 CAM-7.0 REG
Q843 CAM 15V REG
Q815 DRUM PWM DRIVE
Q852 MT 4.75V REG
Q814 DRUM PWM DRIVE
Q810 1.9V REG
Q853-855 MT 4.75V SWITCH
Q817 SWITCHING
Q808 3.1V REG
Q829, 834 CAM -7.0V SWITCH
Q844 PANEL -15.3 REG
Q842, 847, 856 CAM 15V SWITCH
Q832 PANEL 3.1V SWITCH
Q828 LCD POWER SWITCH
Q836, 839 PANEL -15.3 SWITCH
Q807 SWITCHING
Q823 EMERGENCY DET
Q827 LCD POWER SWITCH
T801 CONVERTER (TRV MODEL) DC/DC CONVERTER (TR MODEL)

SECTION 5
ADJUSTMENTS

Refer to page 3 as Table for distinction functions of models and classification

5-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Color monitor
- Regulated power supply
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color bar chart for pattern box	J-6020-250-A	
J-5	Adjusting remote commander (RM-95-remodeled partly) (Note 1)	J-6082-053-B	
J-6	Siemens star	J-6080-875-A	For checking the flange back
J-7	Multi CPC jig	J-6082-311-A	For adjusting LCD block
J-8	CPC-7 jig	J-6082-382-A	For adjusting the video section and color viewfinder adjustment
J-9	Power code (Note 2)	J-6082-223-A	For connecting the battery terminal and DC power supply
J-10	AFM DEV jig	J-6082-312-A	For adjusting the deviation
J-11	Clear chart	J-6080-621-A	
J-12	Extension cable (16P, 0.5 mm)	J-6082-357-A	For extension between the CD-210/211 board (CN401) and VC-215 board (CN501)
J-13	IR receiver jig	J-6082-383-A	For adjusting the IR transmitter
J-14	Extension cable (70P, 0.8 mm)	J-6082-439-A	For extension between the DD-107 board (CN931) and VC-215 board (CN915)

Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

Note 2: Connect the adjusting remote commander to the LANC jack, and set the HOLD switch to the "ADJ" side, or press the battery switch of the battery terminal using adhesive tape, etc.

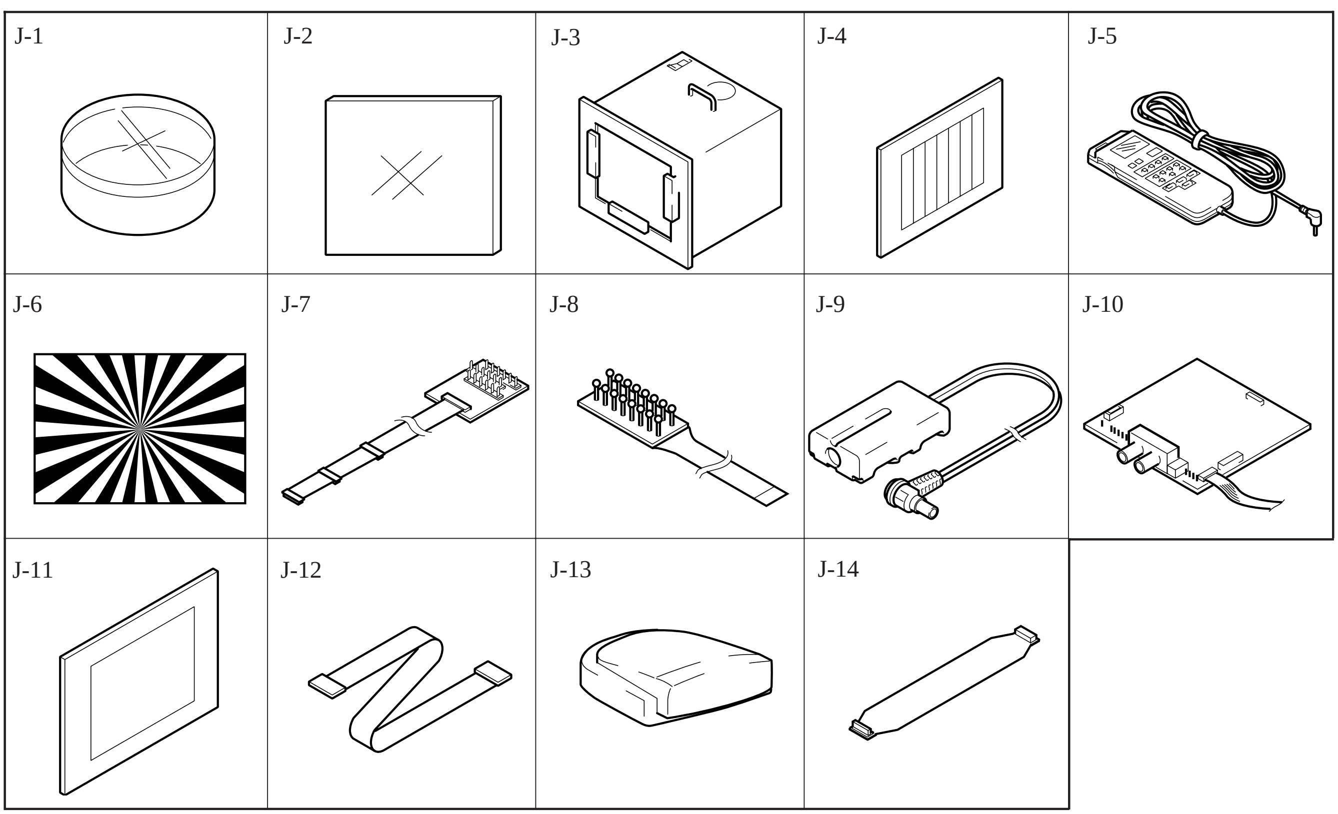


Fig. 5-1-1.

1-1-2. Preparations

Note 1: For details of how remove the cabinet and boards, refer to "2. DISASSEMBLY".

Note 2: When performing only the adjustments, the lens block and boards need not be disassembled.

1) Connect the equipment for adjustments according to Fig. 5-1-3, 4.
2) By setting the "Forced Camera Power ON mode", the camera power can be turned ON even if the front panel block (MA-345/346 board, power switch, microphone unit) has been removed. When removing the front panel block disconnect the following connector.
   1. VC-215 board CN916 (18P 0.5mm)
3) The video light model need not be assembled. If removing it. disconnect the following connector.
   1. VC-215 board CN909 (4P 0.8mm)

Note 3: As removing the cabinet (R) (removing the VC-215 board CN911) means removing the lithium 3V power supply (CF-60/61 board) , data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data and data on the history use. (Refer to the "Service Mode" of "VIDEO SECTION ADJUSTMENT" for the data on the history use.)

Note 4: Setting the "Forced Camera Power ON" Mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjusting remote commander.
   The above procedure will enable the camera power to be turned on with the front panel block removed. After completing adjustments, be sure to exit the "Forced Camera Power ON Mode".

Note 5: Exiting the "Forced Camera Power ON" Mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjusting remote commander.
3) Select page: 0, address: 01, and set data: 00.

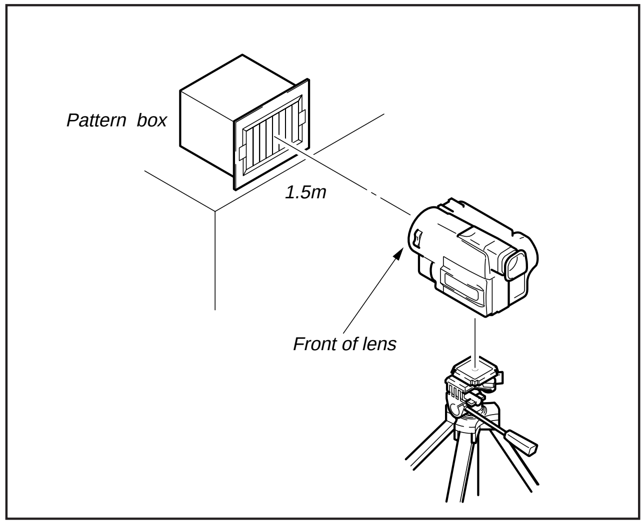
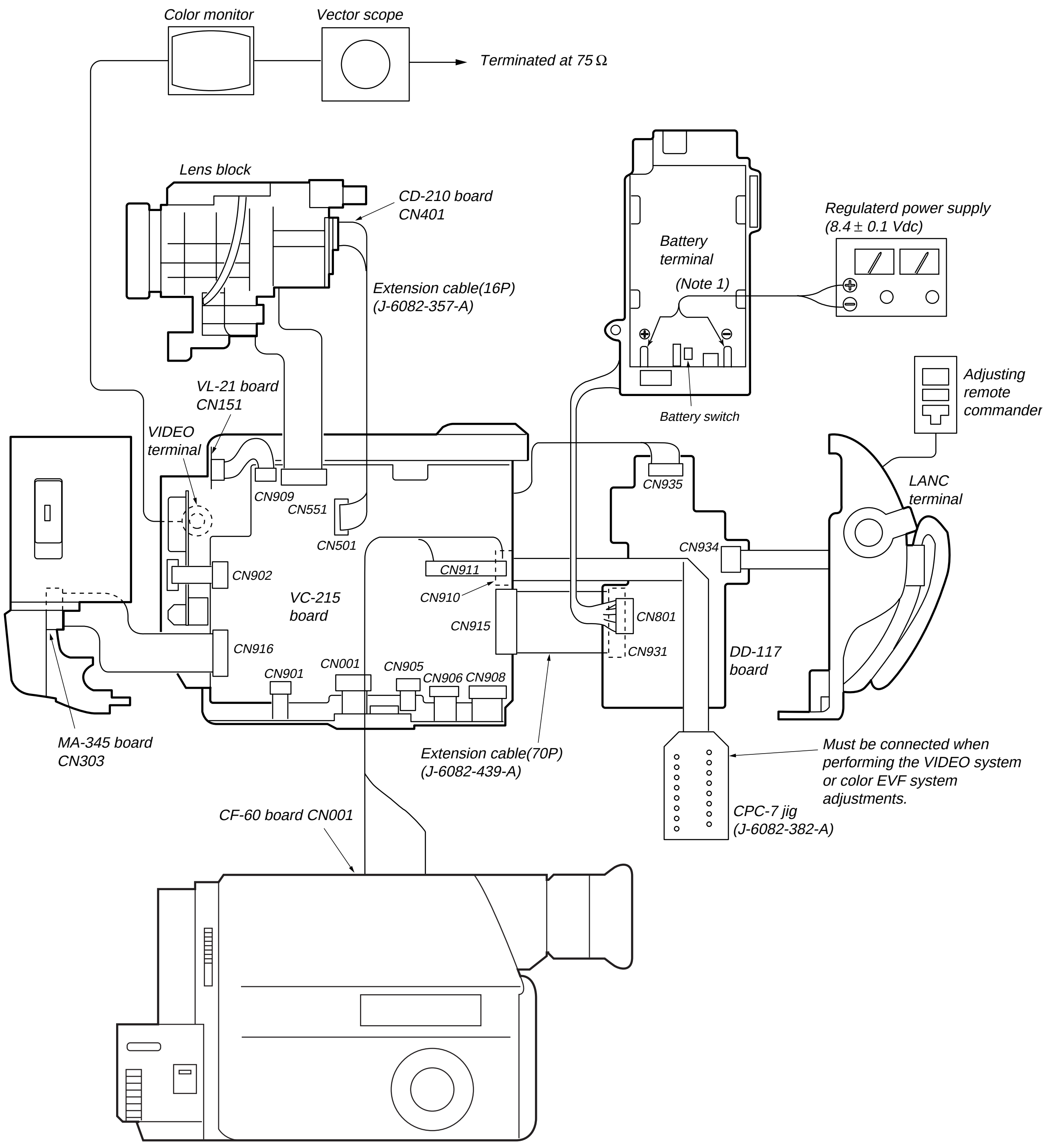


Fig. 5-1-2.

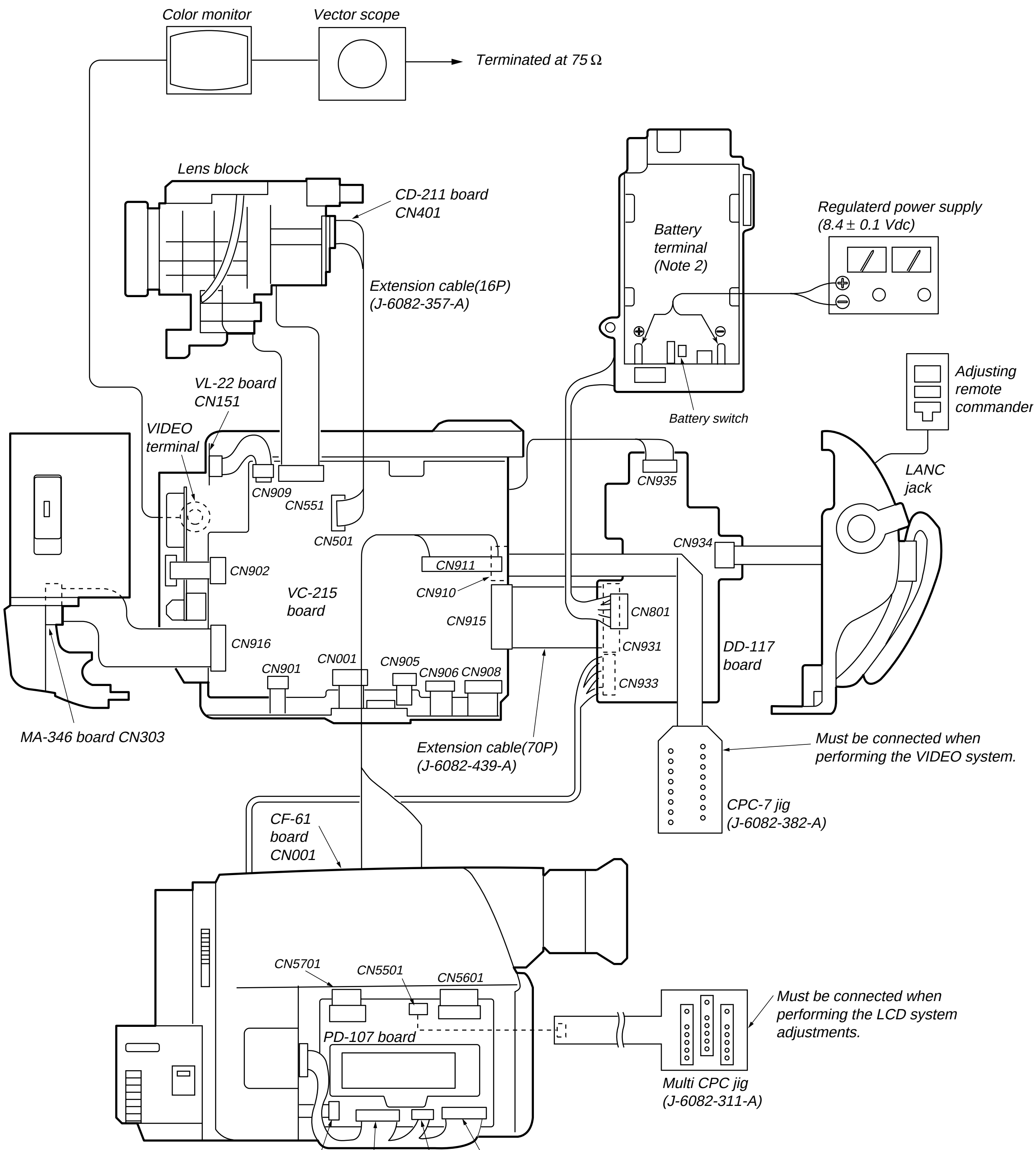
TR MODEL



Note 1: Connect the adjusting remote commander to the LANC jack, and set the HOLD switch to the "ADJ" side, or press the battery switch of the battery terminal using adhesive tape, etc. or use the AC power adaptor.

Fig. 5-1-3.

TRV MODEL



Note 2 : Connect the adjusting remote commander to the LANC jack, and set the HOLD switch to the "ADJ" side, or press the battery switch of the battery terminal using adhesive tape, etc. or use the AC power adaptor.

Fig. 5-1-4.

1-1-3.Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments without loading cassette.

1. POWER switch (MA-345/346 board) .... CAMERA
2. NIGHT SHOT switch (Lens Block) .... OFF
   (Night shot model)
3. DEMO MODE (Menu display) .... OFF
4. DIGITAL ZOOM (Menu display) .... OFF
5. STEADY SHOT (Menu display) .... OFF
6. DISPLAY (Menu display) .... V-OUT/LCD
7. FOCUS switch (MF-8500) .... MANUAL
8. PROGRAM AE (CF-60/61 board) .... Auto
9. BACK LIGHT (CF-60/61 board) .... OFF
10. PICTURE EFECT (CF-60/61 board) .... OFF
11. 16 : 9 WIDE (Menu display) .... OFF

2. Adjusting Procedure

Adjust in the given order.

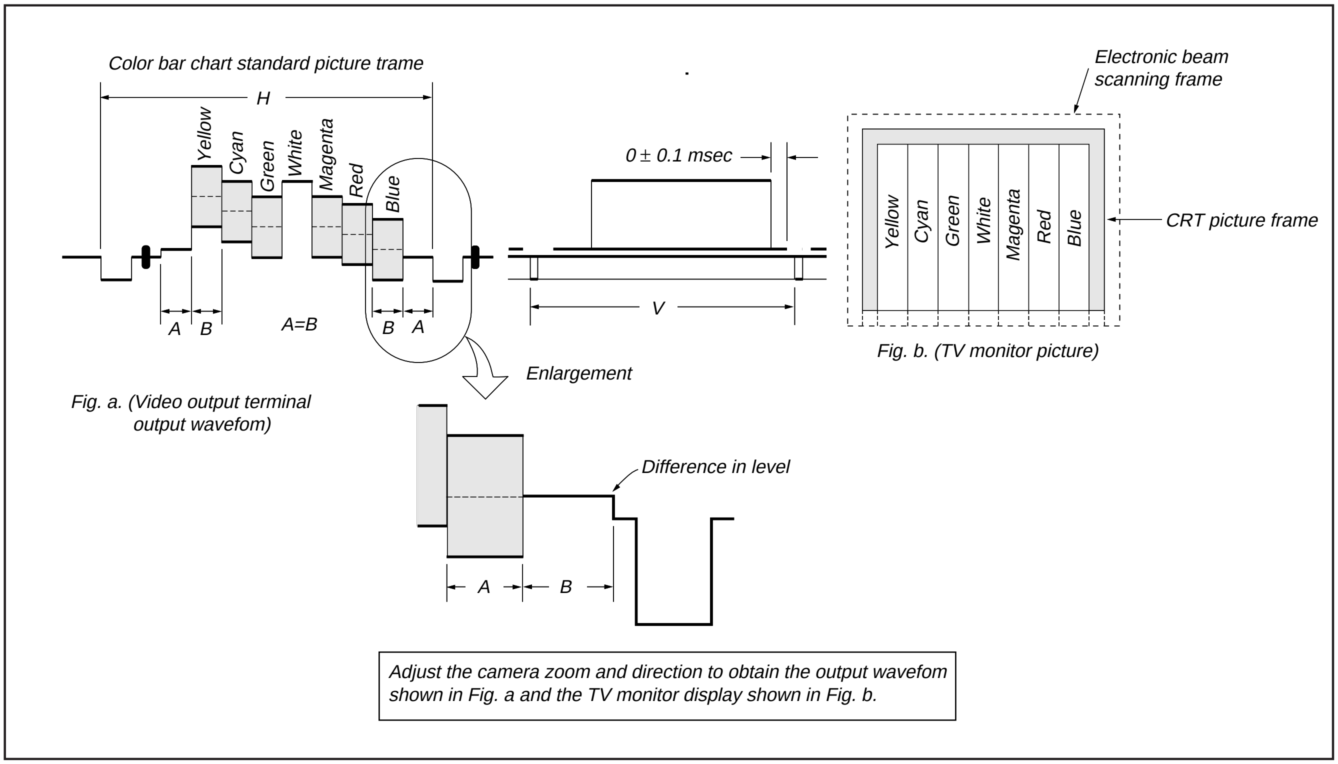


Fig. 5-1-5.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 5-1-5. if adjustments are performed using the color bar chart.
   (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and insert a clear chart in its place. (Do not perform zoom operations during this time.)
3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm x 841 mm) paper to a black one, and make the chart shown in Fig. 5-1-6.

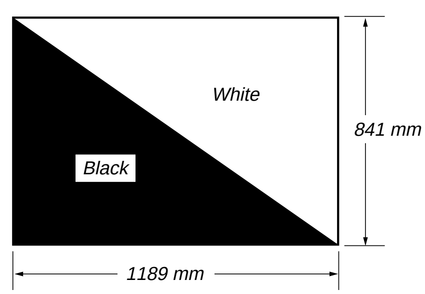


Fig. 5-1-6.

Note : Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

1-1-4. Adjusting Remote Commander

The adjusting remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjusting remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the nonvolatile memory.

1. Using the adjusting remote commander

1) Connect the adjusting remote commander to the LANC terminal.
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 5-1-7.

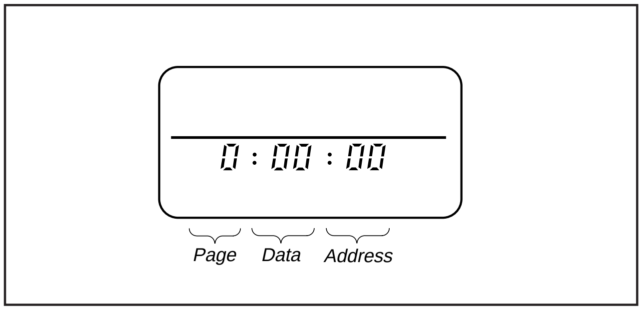


Fig. 5-1-7.

3) Operate the adjusting remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 5-1-1.

   - Changing the address
     The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (D, E, F page) in the nonvolatile memory.
     (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)
4) Select page: 0, address: 01, and set the data to 01, and enables Page D and E, F to be adjusted.
5) After completing all adjustments, set data: 00 to page: 0, address: 01 and turn off the main power supply (8.4V) once.

2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

1-1-5. Data Processing

The calculation of the DDS display and the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 5-1-2. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

The lower digits of the hexadecimal notation / The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② ↓ D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
①→ B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote commander display.

(Example) In the case that the DDS display and the adjusting remote commander display are BD (bd).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 5-1-2.

1-2. INITIALIZATION OF D, E, F PAGE DATA

1. Initializing the D,E,F Page Data

Note 1: If "Initializing the D, E, F Page Data" is performed, all data of the D page, E page and F page will be initialized. (It is impossible to initialize a single page.)

Note 2: If the D,E,F page data has been initialized, "Modification of D, E, F Page Data" and all adjustments need to be performed again.

Adjusting page	D
Adjusting Address	00 to 6F
Adjusting page	F
Adjusting Address	00 to FF
Adjusting page	E
Adjusting Address	00 to FF

Initializing Method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 2, address: 00, and set data: 55
3) Select page: 2, address: 01, set data: 55 and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 02, and check that the data is 01.
5) Select page: 3, address: 00, and set data: 29.
6) Select page: 3, address: 01, set data: 29, and press the PAUSE button of the adjusting remote commander.
7) Select page: 0, address: 01, and set data: 00.
8) Perform "Modification of D,E,F Page Data".

2. Modification of D, E, F Page Data

If the D, E, F page data has been initialized, change the data of the "Fixed data-2" address shown in the following tables by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.

Note : If copy the data built in the different model, the camcorder may not operate.

3) When changing the data, press the PAUSE button of the adjusting remote commander each time when setting new data to write the data in the non-volatile memory.
4) Check that the data of adjustment addresses is the initial value. If not, change the data to the inital value.
5) After compleating "Modification of D, E, F Paga Data" select page: 0, address: 01, and set data: 00. Also perform all adjustments.

3. D Page Table

Note1 :

Fixed data-1 : Initialized data.
(Refer to “1. Initializing the D,E,F Page Data”.)

Fixed data-2 : Modified data.
(Refer to “2. Modification of D, E, F Page Data”).

Address	Initial Value	Remark
00 to 0F		
10	00	Fixed data-1
11	00	
12	00	
13		Fixed data-2 (Modified data, copy the data built in the same model.)
14		
15		
16		
17		
18		
19		
1A		
1B		
1C		
1D		
1E		
1F		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
2A	00	Fixed data-1
2B	00	
2C	00	
2D	00	
2E		Fixed data-2
2F	64	Fixed data-1
30	88	Battery end adj.
31	8D	
32	A8	
33	BD	
34	C8	
35	05	Fixed data-1
36	02	
37	01	
38	05	
39		Fixed data-2 (Modified data, copy the data built in the same model.)
3A		
3B		
3C		
3D	07	Fixed data-1
3E		Fixed data-2 (Modified data, copy the data built in the same model.)
3F		
40		
41		
42	04	Fixed data-1
43		Fixed data-2
44	06	Fixed data-1
45	77	
46		Fixed data-2
47	8F	Fixed data-1
48	06	
49	05	
4A	03	

Address	Initial Value	Remark
4B	01	Fixed data-1
4C	00	
4D	00	
4E	00	
4F	00	
50	0E	
51	2A	
52	47	
53	69	
54	91	
55	BF	
56	FB	
57	FF	
58	E2	
59	B2	
5A	7F	
5B	4D	
5C	11	
5D	00	
5E	00	
5F	00	
60	2D	
61	10	
62	1E	
63	19	
64	00	
65	00	
66	00	
67	00	
68	00	
69	00	
6A	00	
6B	00	
6C	00	
6D	00	
6E	00	
6F	00	

4. F Page table

Note 1:

Fixed data-1 : Initialized data.
(Refer to “1. Initializing the D,E,F Page Data”.)
Fixed data-2 : Modified data.
(Refer to “2. Modification of D, E, F Page Data”).

Note 2 : There are three models classified by VTR formats as shown below, and the initial value of adjustment is different according to the model.

Hi8 model : CCD-TR516/TR516PK/TR716
CCD-TRV36/TRV36PK/TRV43/TRV46/TRV46PK
Standard8 model : CCD-TR315/TR416/TR416PK
CCD-TRV16/TRV16PK

Address	Initial Value	Remark
00 to 0F		
10	00	Emergency memory address
11	00	
12	00	
13	00	
14	00	
15	00	
16	00	
17	00	
18	00	
19	00	
1A	00	
1B	00	
1C		Fixed data-2
1D		
1E		
1F		
20		Fixed data-1:CCD-TR516/TR516PK, TRV36/TRV36PK Fixed data-2:CCD-TR716, TRV43/TRV46/TRV46PK
21	[52] <50>	G-CAM flip adj. < > : CCD-TR716, TRV43/TRV46/TRV46PK [ ] : CCD-TR516/TR516PK, TRV36/TRV36PK
22		Fixed data-2
23		
24		Fixed data-1
25		
26		Fixed data-2
27		Fixed data-1
28		
29		
2A		
2B		Fixed data-2
2C	A0	28MHz origin osc. adj.
2D		Fixed data-2
2E		Fixed data-1
2F	80	Hall adj.
30	80	
31	18	Max gain adj.
32		Fixed data-2
33		Fixed data-1
34	1B	Color reproduction adj.
35		Fixed data-1
36	42	Color reproduction adj.
37		Fixed data-1
38		
39		

Address	Initial Value	Remark
3A	89	Auto white balance adj.
3B	59	
3C	38	IRIS IN/OUT adj.
3D	41	
3E	25	Flange back adj.
3F	00	
40	19	
41	00	
42	35	
43	58	Angular velocity sensor sensitivity check Address 43, 44 and fixed data address. (CCD-TR716, TRV43/TRV46/TRV46PK)
44	5E	
45		Fixed data-1
46	8D	1.5MHz deviation adj.
47	7A	BPF f0 adj.
48		Fixed data-1
49	6B	Y OUT level adj.
4A	40	AFC f0 adj.
4B	9A	C OUT level adj.
4C		Fixed data-1
4D	7B	Filter f0 adj.
4E	60	RP filter f0 adj.
4F		Fixed data-1
50		
51		
52		
53	40	REC Y current adj. (Addresses 57 to5A are fixed data addresses.)
54	40	
55	5F	
56	5F	
57	9A/80	Note 2 : Hi8 model/ Standard8 model
58	80/80	
59	9A/80	
5A	80/80	
5B	50	REC L level adj. (Addresses 63 to 64 are fixed data addresses.)
5C	50	
5D	43	
5E	43	
5F	66	
60	66	
61	67	
62	67	
63	7C/80	Note 2 : Hi8 model/ Standard8 model
64	7C/80	
65	80	REC C current adj.
66	41	IR video deviation Adj.
67	33	IR audio deviation Adj.
68	C7	IR video carrier freq. Adj.
69	80	CAP FG offset adj.
6A		Fixed data-2
6B		Fixed data-1
6C		
6D		
6E		
6F		
70	3B	AWB standard data input adj.
71	FF	
72	56	
73	7D	
74		Fixed data-1
75		
76	1B	Flange back adj.
77	54	
78	25	
79	80	
7A	10	
7B	FF	

Address	Initial Value	Remark
7C	0A	Switching position adj.
7D	00	
7E		Fixed data-1
7F		
80		Fixed data-2
81		
82		Fixed data-1
83		
84		Fixed data-2
85		Fixed data-1:CCD-TR516/TR516PK,TRV36/TRV36PK Fixed data-2:CCD-TR716, TRV43/TRV46/TRV46PK
86		Fixed data-2
87		Fixed data-1
88		
89		
8A		
8B		
8C		
8D		Fixed data-2
8E		
8F		Fixed data-1
90		
91		
92		
93		
94		Fixed data-2
95		
96		Fixed data-1
97		
98		Fixed data-2
99		Fixed data-1
9A		Fixed data-2
9B		Fixed data-1
9C		Fixed data-2
9D		Fixed data-1
9E		Fixed data-2
9F		Fixed data-1
A0		Fixed data-2
A1		
A2		
A3		
A4		Fixed data-1
A5		
A6		Fixed data-2
A7		
A8		
A9		
AA		Fixed data-1
AB		
AC		Fixed data-2
AD		Fixed data-1
AE		Fixed data-2
AF		Fixed data-1
B0		
B1		
B2		
B3		
B4		
B5		
B6		
B7		
B8		
B9		
BA		
BB		
BC		
BD		

Address	Initial Value	Remark
BE		Fixed data-2
BF		Fixed data-1
C0		
C1		
C2		
C3		
C4		
C5		Fixed data-2
C6		Fixed data-1
C7		
C8		
C9		
CA		
CB		
CC		
CD		
CE		
CF		
D0		
D1		
D2		
D3		
D4		
D5		
D6		
D7		
D8		
D9		Fixed data-2
DA		Fixed data-1
DB		Fixed data-2
DC		
DD		Fixed data-1
DE		
DF		
E0		
E1		
E2		
E3		Fixed data-2
E4		
E5		Fixed data-1
E6		Fixed data-2
E7		Fixed data-1
E8		
E9		
EA		
EB		Fixed data-2
EC		
ED		Fixed data-1
EE		
EF		
F0		
F1		
F2		Fixed data-2
F3		Fixed data-1
F4		
F5	FF	Color reproduction adj.
F6	F6	
F7		Fixed data-1
F8		
F9		
FA		
FB		
FC		
FD		
FE		
FF		

5. E Page Table

Note 1:

Fixed data-1 : Initialized data.
(Refer to "1. Initializing the D,E,F Page Data".)

Fixed data-2 : Modified data.
(Refer to "2. Modification of D, E, F Page Data").

Note 2: See "1-5. LCD SYSTEM ADJUSTMENT".

Address	Initial Value	Remark
00		Fixed data-1
01		
02		
03		
04		
05		
06		
07		
08		
09		
0A		Fixed data-2
0B		
0C		Fixed data-1
0D		
0E		
0F		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
1A		
1B		
1C		
1D		
1E		
1F		
20		Fixed data-2
21		Fixed data-1
22		
23		
24		
25		
26		
27		
28		
29		
2A		
2B		Fixed data-2
2C		
2D		
2E		
2F		Fixed data-1
30		
31		
32		
33		
34		
35		
36		
37		
38		Fixed data-1
39		
3A		
3B		Fixed data-2
3C		Fixed data-1
3D		
3E		
3F		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
4A		
4B		
4C		
4D		
4E		
4F		Fixed data-2
50		Fixed data-1
51		
52		
53		Fixed data-2
54		
55		Fixed data-1
56		
57		
58		
59		Fixed data-2
5A		
5B		Fixed data-1
5C		Fixed data-2
5D		Fixed data-1
5E		
5F		
60		Fixed data-2
61		
62		
63		Fixed data-1
64		Fixed data-2
65		
66		
67		Fixed data-1
68		
69		
6A		
6B		Fixed data-2
6C		
6D		Fixed data-1
6E		Fixed data-2
6F		
70		Fixed data-1
71		TR model:Fixed data-1/TRV model:Fixed data-2
72		Fixed data-1
73		Fixed data-2
74		Fixed data-1
75		Fixed data-2
76 to 99		Fixed data-1

Address	Initial Value	Remark
9A		Fixed data-2
9B		Fixed data-1
9C		Fixed data-2
9D		Fixed data-1
9E		
9F		
A0		Fixed data-2
A1		Fixed data-1
A2		TR model:Fixed data-1/TRV model:Fixed data-2
A3		Fixed data-2
A4		Fixed data-1
A5		
A6		
A7		
A8		
A9		
AA		
AB		
AC		
AD		
AE		
AF		
B0		
B1		
B2		
B3		
B4		
B5		
B6		
B7		
B8		
B9		
BA		Fixed data-2
BB		
BC		
BD		
BE		
BF		TR model : Fixed data-1
C0		TRV model : Fixed data-2
C1		
C2		VCO adj. (Color EVF)
C3		Bright adj. (Color EVF)
C4		Contrast adj. (Color EVF)
C5		White balance adj. (Color EVF)
C6		White balance adj. (Color EVF)
C7		Fixed data-2 : Color EVF model
C8		Fixed data-1 : B/W EVF model
C9		
CA		
CB		
CC		Backlight consumption current adj. (Color EVF)
CD		Fixed data-1
CE		
CF	Note 2	Bright adj. (LCD)
D0	Note 2	Color adj. (LCD)
D1	Note 2	White balance adj. (LCD)
D2	Note 2	White balance adj. (LCD)
D3	Note 2	Contrast adj. (LCD)
D4	Note 2	D range adj. (LCD)
D5	Note 2	V-COM level adj. (LCD)
D6	Note 2	VCO adj. (LCD)
D7	Note 2	V-COM adj. (LCD)
D8		Fixed data-1

Address	Initial Value	Remark
D9		Fixed data-1
DA		
DB		TR model:Fixed data-1/TRV model:Fixed data-2
DC		Fixed data-1
DD		
DE		
DF		
E0		
E1		
E2		
E3		
E4		
E5		
E6		
E7		
E8		
E9		
EA		Fixed data-2
EB		Fixed data-1
EC		
ED		
EE		
EF		Fixed data-2
F0		Fixed data-1
F1		
F2		
F3		Fixed data-2
F4		Fixed data-1
F5		
F6		
F7		
F8		
F9		
FA		
FB		
FC to FF		

1-3. CAMERA SYSTEM ADJUSTMENTS

Before perform the camera system adjustments, Check that the specified value of “28MHz Origin Oscillation Adjustment”, “Y OUT level Adjustment” and “C OUT level Adjustment” of “VIDEO SYSTEM ADJUSTMENT” are satisfied.

1. G-CAM flip Adjustment

Set the color reproduction conditions to optimum.

Subject	Color bar chart standard picture frame
Measurement Point	Display data of page 1 of the adjusting remote commander (Note 1)
Measuring Instrument	
Adjustment Page	F
Adjustment Address	21

Note 1. Displayed data of page 1 of the adjusting remote commander.

1 : XX : XX
→ S2 (lower XX)
→ S1 (higher XX)

Note 2. [ ] : CCD-TR516/TR516PK
CCD-TRV36/TRV36PK
< > : CCD-TR716
CCD-TRV43/TRV46/TRV46PK

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 03, and set data: 16.
3) Select page 1 of the adjusting remote commander, and compare the higher 2 digits (S1) and lower 2 digits (S2) of the 4-degits display data.
When S1<S2
Perform steps 4) onwards.
When S1≧S2
Perform steps “Processing after Completing Adjustments”.
4) Select page: F, address: 21, set data:
when the read data is [52] or <50>, change to [D2] or <D0>, and the read data is [D2] or <D0>, change to [52] or <50>, (initial value is 52) and press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments
1) Select page: 0, address: 03, and set data: 00.
2) Select page: 0, address: 01, and set data: 00.

2. HALL Adjustment

For detecting the position of the lens iris, adjust the hall AMP gain and offset.

Subject	Not required
Measurement Point	DDS display data of LCD or TV monitor (Note 3)
Measuring Instrument	
Adjustment Page	F
Adjustment Address	2F, 30
Specified Value	7E to 82 during IRIS OPEN (Note 1) 13 to 17 during IRIS CLOSE (Note 2)

Note 1: Select page: 2, address: 01, set data: 01, and press the PAUSE button of the adjusting remote commander.

Note 2: Select page: 2, address: 01, set data: 03, and press the PAUSE button of the adjusting remote commander.

Note 3: DDS display data of LCD or TV monitor.

00 00XX → Object data

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 03, and set data: 03.
3) Select page: D, address: 11, set data: 02, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 01, set data: 03, and press the PAUSE button.
5) Select page: F, address: 30, set data: 80, and press the PAUSE button.
6) Select page: F, address: 2F, set data: 40, and press the PAUSE button.
7) Read the DDS display data (the bottom two digits of the display data at the bottom right of the LCD display or the TV monitor), and this data is named K_2.
8) Select page: F, address: 2F, set data: 30, and press the PAUSE button.
9) Read the DDS display data, and this data is named K_1.
10) Select page: 2, address: 01, set data: 01, and press the PAUSE button.
11) Read the DDS display data, and this data is named W_1.
12) Select page: F, address: 2F, set data: 40, and press the PAUSE button.
13) Read the DDS display data, and this data is named W_2.
14) Convert W_1, W_2, K_1, K_2, to decimal notation, and obtain W_1' , W_2' , K_1' , K_2'. (Refer to Table 5-1-2. "Hexadecimal notation - decimal notation conversion table".)
15) Calculate X_1' using the following equations (decimal notation calculation).

    $A' = W_2' + K_1' - W_1' - K_2'$ Equation 1

    $B' = W_1' - K_1'$ Equation 2

    $X_1' = [1696 + (48 \times A') - (16 \times B')] / A'$ Equation 3
16) Convert X_1' to hexadecimal notation, and obtain X_1. (Round off to one decimal place)
17) Select page: F, address: 2F, set data: X_1, and press the PAUSE button.
18) Select page: 2, address: 01, and set data: 01, and press the PAUSE button.
19) Select page: F, address: 30, change the data and adjust the DDS display data to "80".
20) Press the PAUSE button of the adjusting remote commander.
21) Select page: 2, address: 01, and set data: 03, and press the PAUSE button.
22) Read the DDS display data, and this data is named K_0. If K_0 lies within the "13" to "17" range, perform "Processing after completing adjustments". If it is lies outside the range, perform the following adjustments.
23) Convert K_0 to decimal notation, and obtain K_0'.
24) Calculate X_2' using the following equations (decimal notation calculation).

    $C' = 128 - B' - K_0'$ Equation 4

    $X_2' = [(106 - B') \times (X_1' - 48) + (48 \times C')] / C'$ Equation 5

    (X_1' and B' are values obtained from equations 2) and 3))
25) Convert X_2' to hexadecimal notation, and obtain X_2. (Round off to one decimal place)
26) Select page: F, address: 2F, set data: X_2, and press the PAUSE button.
27) Select page: 2, address: 01, set data: 03, and press the PAUSE button.
28) Select page: F, address: 30, change the data and adjust the DDS display data to "15".
29) Press the PAUSE button of the adjusting remote commander.
30) Select page: 2, address: 01, set data: 01, and press the PAUSE button.
31) Check the DDS display data lies within the "7E" to "82" range.

Processing after Completing Adjustments

1) Select page: D, address: 11, and set data: 00, and press the PAUSE button.
2) Select page: 0, address: 01, and set data: 00.
3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button.
4) Select page: 0, address: 03, and set data: 00.

3. Flange Back Adjustment

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

3-1. Flange Back Adjustment(1)

Subject	Flange back adjustment chart (2.0 m from the front of the lens) (Luminance: 230 ± 30 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E to 42, 76 to 7B

Switch setting:
1) NIGHT SHOT switch .... OFF

Adjusting method:
1) Check that at both the zoom lens TELE end and WIDE end, the center of the chart for the flange back adjustment and center of the exposure screen coincide.
2) Select page: 0, address: 01, and set data: 01.
3) Check that the data of page: F, address: 3E to 42, 76 to 7B is the initial value (See table below).

Address	Data	Address	Data
3E	25	77	54
3F	00	78	25
40	19	79	80
41	00	7A	10
42	35	7B	FF
76	1B		

4) Select page: 2, address: 02, and check that the data is “00 “.
5) Select page: 2, address: 01, set data: 13, and press the PAUSE button of the adjusting remote commander.
6) Select page: 2, address: 01, set data: 15, and press the PAUSE button of the adjusting remote commander.
(The adjustment data will be automatically input to page: F, addresses: 3E to 42, 76 to 7B.)
7) Select page: 2, address: 02, and check that the data is „01“.

Processing after Completing Adjustments
1) Turn OFF the main power supply (8.4V).
2) Perform “Flange Adjustment (2)”.

3-2. Flange Back Adjustment (2)

Perform this adjustment after performing “Flange Back Adjustment (1)”.

Subject	Subject more than 500m away (Subjects with clear contrast such as buildings, etc.)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E to 42, 76 to 7B

Switch setting:
1) NIGHT SHOT switch .... OFF

Adjusting method:
1) Set the zoom lens to the TELE end and expose a subject that is more than 500 m away (subject with clear contrast such as building, etc.). (Nearby subjects less than 500 m away should not be in the screen.)
2) Select page: 0, address: 01, and set data: 01.
3) Select page: 2, address: 02, and check that the data is “00”.
4) Select page: 2, address: 01, set data: 13, and press the PAUSE button of the adjusting remote commander.
5) Place a ND filter on the lens so that the optimum image is obtain.
6) Select page: 2, address: 01, set data: 29, and press the PAUSE button of the adjusting remote commander.
(The adjustment data will be automatically input to page: F, addresses: 3E to 42, 76 to 7B.)
7) Select page: 2, address: 02, and check that the data is “01”.

Processing after Completing Adjustments
1) Select page: 0, address: 01, and set data: 00.
2) Turn OFF the main power supply (8.4V).
3) Perform “Flange Back Check”.

4. Flange Back Check

Subject	Siemens star chart (2.0 m from the front of the lens) (Luminance: approx. 200 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E to 42, 76 to 7B

Switch setting:
1) NIGHT SHOT switch .... OFF

Checking method:
1) Place the Siemens star 2.0m from the front of the lens.
2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appear on the image.
3) Select page: 2, address: 40, and set data: 02.
4) Select page: 2, address: 41, and set data: 01.
5) Shoot the Siemens star with the zoom TELE end.
6) Turn on the auto focus.
7) Check that the lens is focused (Note1).
8) Select page: 2, address: 21, and set data: 10.
9) Shoot the Siemens star with the zoom WIDE end.
10) Observe the TV monitor and check that the lens is focused.

Note 1: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on the page 1 of the adjusting remote commander.
1) Select page: 0, address: 03, and set data: 0F.
2) Page 1 shows the state of the focus.

1 : 00 : XX → Odd: Focused
Even: Unfocused

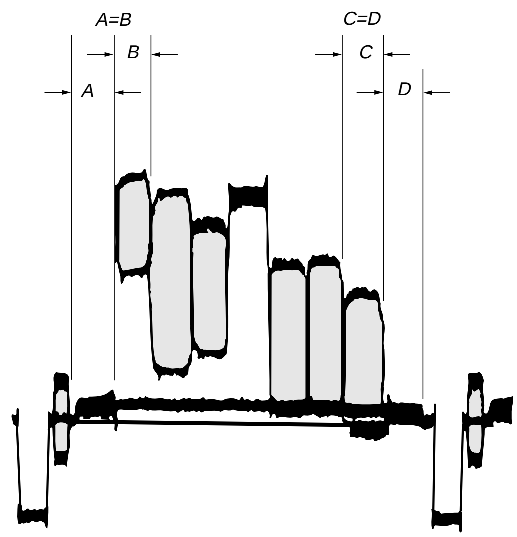
Processing after Completing Adjustments
1) Select page: 2, address: 21, and set data: 00.
2) Select page: 0, address: 03, and set data: 00.
3) Select page: 2, address: 40, and set data: 00.
4) Select page: 2, address: 41, and set data: 00.

5. Picture Frame Setting

Subject	Color bar chart standard picture frame (1.5m from the front of the lens)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor
Specified Value	A=B, C=D, t=0 ± 0.1msec

Setting method:
1) Adjust the zoom and the camera direction, and set to the specified position.
2) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "Color bar chart standard picture frame".

1. Horizontal period



2. Vertical period

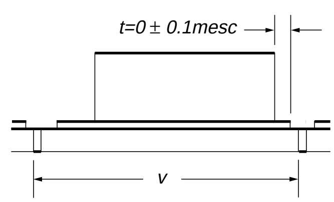


Fig. 5-1-8.

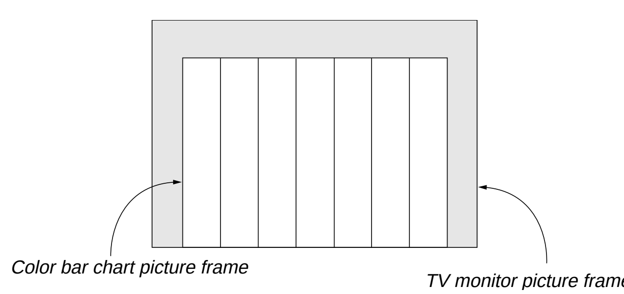


Fig. 5-1-9.

6. Color Reproduction Adjustment

Adjust the color Separation matrix coefficient so that proper color reproduction is produced.

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	34, 36, F5, F6
Specified Value	All color luminance points should settle within each color reproduction frame.

Switch setting:

1) NIGHT SHOT switch .... OFF

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 2, address: 01, set data: 3D, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 25, set data: 3F, and press the PAUSE button of the adjusting remote commander.
4) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
5) Change the data of page: F, address: 34, 36, F5 and F6, and settle each color luminance point in each color reproduction frame.

Note 1: Be sure to press the PAUSE button of the adjusting remote commander before changing the addresses. If not, the new data will not be written to the memory.

6) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

1) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.

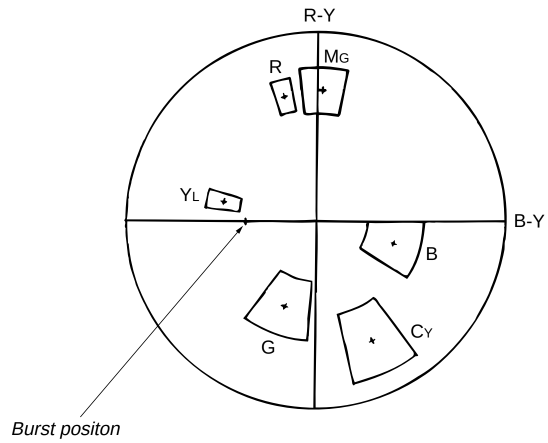


Fig. 5-1-10.

7. IRIS IN/OUT Adjustment

For the unit to judge if the white balance is indoors or outdoors in auto white balance operations, measure the light level and write it in the EEPROM.
If the level is not correct, the white balance will not be accurate.

Subject	Clear chart (Color bar standard picture frame)
Measurement Point	DDS display of LCD or TV monitor (Note 1)
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3C, 3D

Note 1: The right four digits of the display data at the right bottom side of the LCD and TV monitor is the LIGHT LEVEL data.

00 XX XX
→ Lower two digits (right XX)
→ Upper two digits (left XX)

Switch setting:
1) STEADY SHOT (Menu display) .... OFF
2) NIGHT SHOT switch .... OFF

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 03, and set data: 06.
3) Select page: D, address: 11, and set data: 02, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 40, and set data: 02.
5) Select page: 2, address: 01, set data: 0B, and press the PAUSE button of the adjusting remote commander.
6) Read the DDS display data (Note 1), and take the upper two digits as D_1 and the lower two as D_2.
7) Convert D_1 to decimal notation, and obtain D_1'. (Refer to Table 5-1-2. “Hexadecimal notation - decimal notation conversion table” of “Service mode”.)
8) Calculate D_3' using the following equations. (Equations 1 and 2 are for decimal notation calculation).
   When $D_2 \geqq D0$
   $D_3' = D_1' - 21$ .... Equation 1
   When $D_2 < D0$
   $D_3' = D_1' - 22$ .... Equation 2
9) Convert D_3' to hexadecimal notation, and obtain D_3.
10) Select page: F, address: 3C, set data: D_3, and press the PAUSE button of the adjusting remote commander.
11) Select page: 2, address: 01, set data: 09, and press the PAUSE button of the adjusting remote commander.
12) Read the DDS display data (Note 1), and take the upper two digits as D_4 and the lower two as D_5.
13) Convert D_4 to decimal notation, and obtain D_4'. (Refer to Table 5-1-2. “Hexadecimal notation - decimal notation conversion table”.)
14) Calculate D_6' using the following equations. (Equations 3 and 4 are for decimal notation calculation).
   When $D_5 \geqq F0$
   $D_6' = D_4' - 13$ .... Equation 3
   When $D_5 < F0$
   $D_6' = D_4' - 14$ .... Equation 4
15) Convert D_6' to hexadecimal notation, and obtain D_6.
16) Select page: F, address: 3D, set data: D_6, and press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments
1) Select page: D, address: 11, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.
3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 40, and set data: 00.
5) Select page: 0, address: 03, and set data: 00.

8. MAX GAIN Adjustment

Setting the minimum illumination.
If it is not consistent, the image level required for taking subjects in low illuminance will not be produced (dark).

Subject	Clear chart (Color bar standard picture frame)
Measurement Point	DDS display of LCD or TV monitor (Note 1)
Measuring Instrument	
Adjustment Page	F
Adjustment Address	31
Specified Value	C0 to FF

Note 1: The right two digits of the display data at the right bottom side of the LCD and TV monitor is the object data.

00 00 XX
→ Object data

Switch setting:
1) STEADY SHOT (Menu display) .... OFF
2) NIGHT SHOT switch .... OFF

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 11, and set data: 02, and press the PAUSE button of the adjusting remote commander.
3) Select of page: 0, address: 03, and set data: 01.
4) Select page: 2, address: 40, and set data: 02.
5) Select page: 2, address: 56, and set data: 40.
6) Select page: 2, address: 01, set data: 19, and press the PAUSE button of the adjusting remote commander.
7) Select page: F, address: 31, set data: 18, and press the PAUSE button of the adjusting remote commander.
8) Check that the DDS display data (Note 1) lies within the specified value.

Processing after Completing Adjustments
1) Select page: D, address: 11, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.
3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 40, and set data: 00.
5) Select page: 2, address: 56, and set data: 00.
6) Select page: 0, address: 03, and set data: 00.

9. Auto White Balance Standard Data Input

Subject	Clear chart (Color bar standard picture frame)
Adjustment Page	F
Adjustment Address	70 to 73

Note 1: Perform "Color Reproduction Adjustment" before this adjustment.

Note 2: Check that the data of page: 2, address: 02 is data: 00. If not, turn the power of the unit OFF/ON.

Switch setting:

1) NIGHT SHOT switch .... OFF

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Wait for 2 seconds.
3) Select page: 2, address: 01, and set data: 11, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 01, and set data: 0D, and press the PAUSE button of the adjusting remote commander.
   (When the standard data is take in, the data will be automatically input to page: F, address: 70 to 73.)
5) Select page: 2, address: 02, and check that the data is "01".
6) Perform "Auto White Balance Adjustment".

Processing after Completing Adjustments

1) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.

10. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color bar standard picture frame)
Filter	Filter C14 for color temperature correction
Measurement Point	DDS display of LCD or TV monitor
Measuring Instrument	(Note 1)
Adjustment Page	F
Adjustment Address	3A, 3B
Specified Value	R ratio: 2B40 to 2BC0 B ratio: 5E40 to 5EC0

Note 1: Perform "Auto White Balance Standard Data Input" before this adjustment.

Note 2: The right four digits of the display data at the right bottom side of the LCD and TV monitor is the object data.

00 XXXX → Object data

Switch setting:

1) NIGHT SHOT switch .... OFF

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: D, address: 11, and set data: 02, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 01, and set data: 3F, and press the PAUSE button of the adjusting remote commander.
5) Select page: 0, address: 03, and set data: 04.
6) Select page: F, address: 3A, and change the data, and adjust the average value of the DDS display data(Note 2) to the R ratio specified value.
7) Press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 03, and set data: 05.
9) Select page: F, address: 3B, and change the data, and adjust the average value of the DDS display data(Note 2) to the B ratio specified value.
10) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

1) Select page: D, address: 11, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.
3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Select page: 0, address: 03, and set data: 00.

11. White Balance Check

Subject	Clear chart (Color bar standard picture frame)
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 5-1-11. A to C

Switch setting:
1) NIGHT SHOT switch .... OFF

Checking method:
1) Check that the lens is not covered with either filter.
2) Select page: 2, address: 01, set data: 0F, and press the PAUSE button of the adjusting remote commander.
3) Check that the center of the white luminance point is within the circle shown Fig. 5-1-11.A.
4) Select page: 2, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
5) Select page: 2, address: 01, set data: 23, and press the PAUSE button of the adjusting remote commander.
6) Place the C14 filter on the lens.
7) Check that the center of the white luminance point settles in the circle shown Fig. 5-1-11.B.
8) Remove the C14 filter, and place the ND filter 1.3 (1.0 +0.3) on the lens.
9) Check that the white luminance point stopped moving, and then remove the ND filter 1.3.
10) Check that the center of the white luminance point settles within the circle shown Fig. 5-1-11.C.

Processing after Completing Adjustments
1) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.

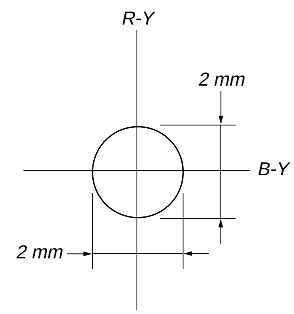


Fig.5-1-11. A

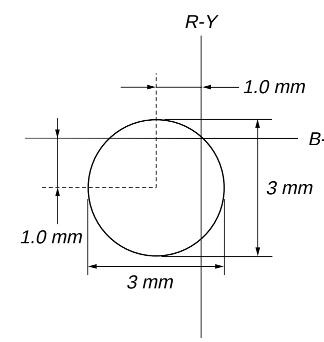


Fig.5-1-11. B

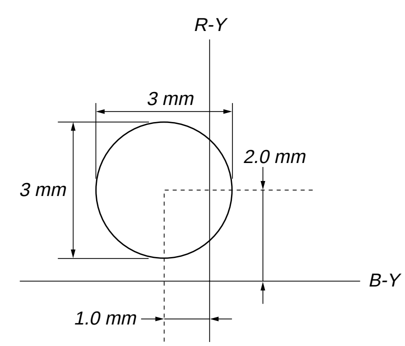


Fig.5-1-11. C

12. Angular Velocity Sensor Sensitivity Check (CCD-TR716/TRV43/TRV46/TRV46PK)

- This adjustment is performed only when replacing the angular velocity sensor.
  Although this adjustment need not be performed when the circuit is damaged, etc., check the operations.
- Note down the sensitivity displayed on the angular velocity sensor of the repair parts. At this time, note down also to which board it was attached to.
  Be sure to check because if attached incorrectly, the screen will vibrate up and down or left and right during hand-shake correction operations.

Precautions on the Parts Replacement
There are two types of repair parts.
Type A : ENC03EA or ENC 03JA
Type B : ENC03EB or ENC 03JB
Replace the broken sensor with a same type sensor. If replace with other parts, the image will vibrate up and down or left and right during hand-shake correction operations. After replacing, re-adjust according to the adjusting method after replacement.

Precautions on Angular Velocity Sensor
The sensor incorporates a precision oscillator. Handle it with care as if it dropped, the balance of the oscillator will be disrupted and operations will not be performed properly.

Page	Address	Data
F	43	58
F	44	5E

Note: The sensor sensitivity of SE451 and SE452 of the SE-80/81 board is written only on the repair parts.

1-4. COLOR ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT
(CCD-TR416/TR416PK/TR516/TR516PK/TR716)

Note 1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note 2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

[Adjusting connector]

Most of the measuring points for adjusting the viewfinder system are concentrated in CN910 of the VC-215 board.

Connect the measuring instruments via the CPC-7 jig (J-6082-382-A).

The following table shows the Pin No. and signal name of CN910.

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

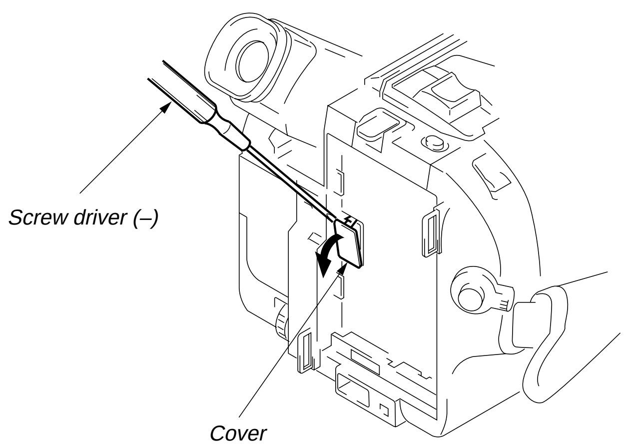


Fig.5-1-12

1. EVF Initial Data Input

Mode	VTR stop
Signal	No signal
Adjustment Page	E
Adjusting Address	C2 to CD

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: E, and input the data in the following table.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

3) Select page: 0, address: 01, and set data: 00.

Address	Data	Remark
C2	B0	VCO adjustment
C3	80	Bright adjustment
C4	77	Contrast adjustment
C5	80	White balance adjustment
C6	80	White balance adjustment
C7	68	Fixed value
C8	50	Fixed value
C9	F8	Fixed value
CA	A8	Fixed value
CB	3C	Fixed value
CC	B0	Backlight Consumption Current Adjustment
CD	70	Fixed value

2. VCO Adjustment (VF-119 board)

Set the VCO free-run frequency. If deviated, the EVF screen will be blurred.

Mode	VTR stop
Signal	No signal
Measurement point	Pin ⑮ of CN910 (VCO) on VC-215 board
Measuring instrument	Oscilloscope (DC range)
Adjustment page	E
Adjustment address	C2
Specified value	A = 1.8 ± 0.1Vdc

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Check the GND level of the oscilloscope.
5) Select page: E, address: C2, change the data and set the VCO output voltage (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

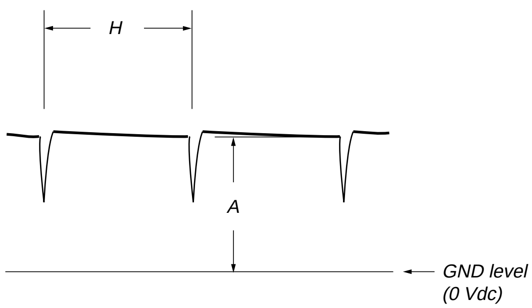


Fig. 5-1-13.

3. Bright Adjustment (VF-119 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement point	Pin ⑯ of CN910 (EVF VG) on VC-215 board
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	C3
Specified value	A = 7.2 ± 0.1 V

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: E, address: C3, change the data and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

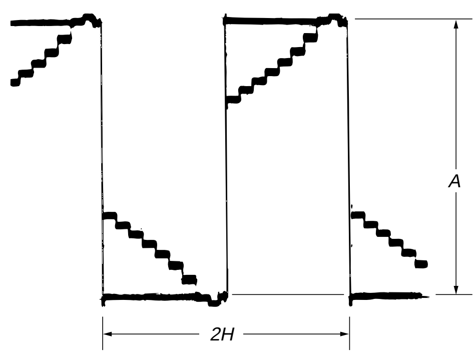


Fig. 5-1-14.

4. Contrast Adjustment (VF-119 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ⑯ of CN910 (EVF VG) on VC-215 board
Measuring Instrument	Oscilloscope
Adjustment Page	E
Adjustment Address	C4
Specified Value	A = 2.1 ± 0.1V

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: E, address: C4, change the data and set the voltage (A) between the 7 step peak and the pedestal to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

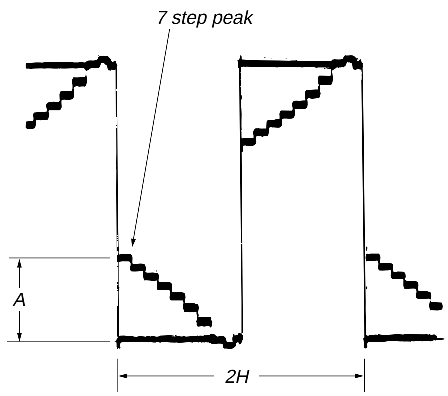


Fig. 5-1-15.

5. Backlight Consumption Current Adjustment (VF-120 board)

Set the backlight luminance and color temperature.
If deviated, the image may become dark or bright.

Mode	VTR stop
Signal	No signal
Measurement Point	+ Probe: Pin ⑭ of CN910 (EVF BL 4.75V) on VC-215 board – Probe: Pin ⑬ of CN910 (EVF BL) on VC-215 board
Measuring Instrument	Digital voltmeter
Adjustment Page	E
Adjustment Address	CC
Specified Value	A = 21.0 ± 1.0 mVdc

Note: Adjust 30 seconds after running on the power supply.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: E, address: CC, change the data and set the voltage difference (A) between Pin ⑭ of CN910 (EVF BL 4.75V) and Pin ⑬ of CN910 (EVF BL) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

6. White Balance Adjustment (VF-119 board)

Correct the white balance.
If deviated, the reproduction of the EVF screen may degenerate.

Mode	VTR stop
Signal	No signal
Measurement Point	Check on EVF screen
Measuring Instrument	
Adjustment Page	E
Adjustment Address	C5, C6
Specified Value	The EVF screen should not be colored.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 51, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 03.
4) Select page: E, address: C5 and C6, set the data to the initial value.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	C5	C6
Data	80	80

5) Check that the LCD screen is not colored. If colored, change the data of page: E, address: C5 and C6 so that the EVF screen is not colored.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

6) Select page: 2, address: 7D, and set data: 00.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 01, and set data: 00.

1-5. MONOCHROME ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

Note: CCD-TR315
CCD-TRV16/TRV16PK/TRV36/TRV36PK/TRV43/
TRV46/TRV46PK

1-5-1. Horizontal Slant Check

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5NSP) Monoscope section
Specified Value	± 1.5 °

Adjusting method:
1) Adjust RV904 (BRIGHT) (VF-99 board) so that the CRT can be seen easily and clearly.
2) Check that the difference between the horizontal line and the tilt of the black mask satisfies the specified value.

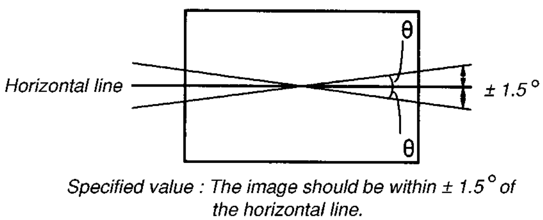


Fig. 5-1-16.

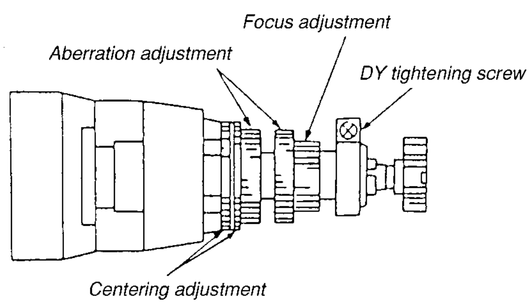


Fig. 5-1-17.

1-5-2. Centering Adjustment

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5NSP) Monoscope section
Specified Value	± 4%

Adjusting method:
1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 5-1-17.)

Note : As the centering position changes due to earth magnetism, rotate it 360˚ in the horizontal direction, and adjust with the center section of the modifying position.

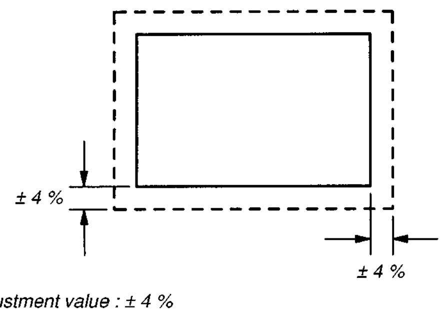


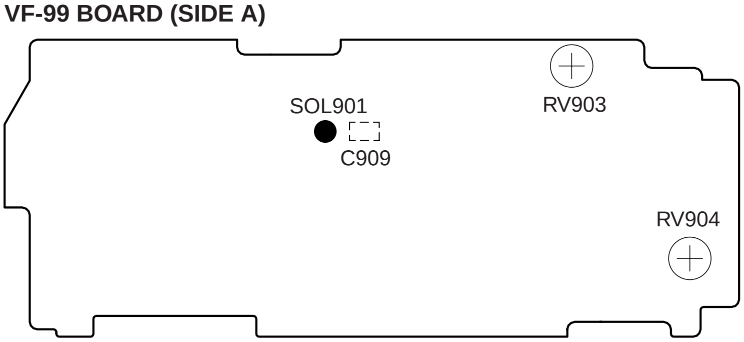
Fig. 5-1-18.

1-5-3. Focus Adjustment

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5NSP) Monoscope section

Adjusting method:
1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 5-1-17.)

VF-99 BOARD (SIDE A)



1-5-4. Aberration Adjustment

Mode	VTR stop
Signal	Dot pattern
Specified Value	b1≦2 • a1 b2≦0.8 • a2

Adjusting method:
1) Adjust the aberration adjustment ring so that the tracing of the dot satisfies the specified value.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

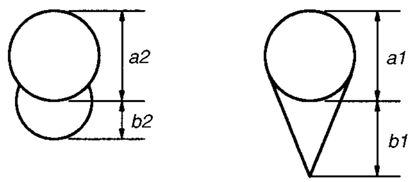
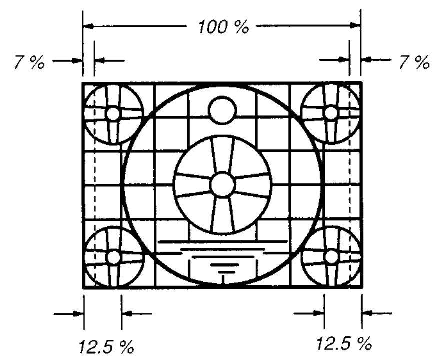


Fig. 5-1-19.

1-5-5. Horizontal Amplitude Adjustment (VF-99 board)

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5NSP) Monoscope section
Adjusting Element	C909 (SOL901)
Specified Value	± 1.5 °

Adjusting method:
1) Rotate RV903, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2) Rotate RV904 so that the brightness is the normal level.
3) Solder or unsolder SOL901 pattern of the H size adjustment capacitor (C909) to “short” or “open”, so that the horizontal direction over scan becomes 14 ± 6% (Left and right totals).



SOL901	Size H
Open	Small
Short	Big

VF-99 BOARD (SIDE A)

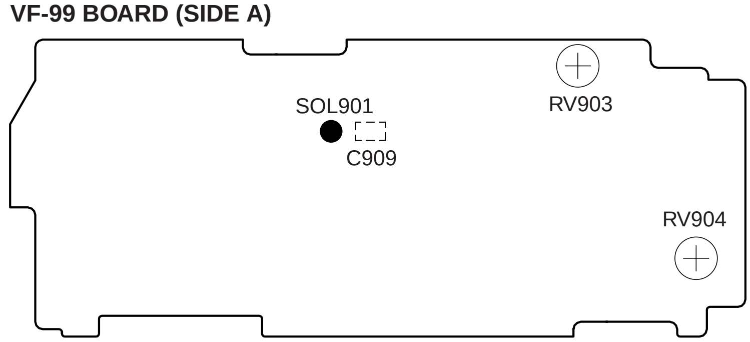


Fig. 5-1-20.

1-5-6. Vertical Amplitude Adjustment (VF-99 board)

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5NSP) Monoscope section
Adjusting Element	RV903
Specified Value	10 ± 3%

Adjusting method:

1) Adjust RV903 so that the vertical direction over scan becomes 10 ± 3% (Top and bottom totals).

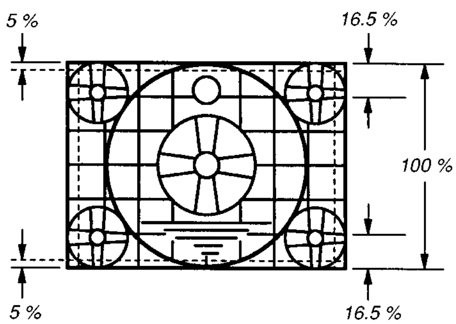


Fig. 5-1-21.

1-5-7. Brightness Adjustments (VF-99 board)

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5NSP) Monoscope section
Specified Value	RV904

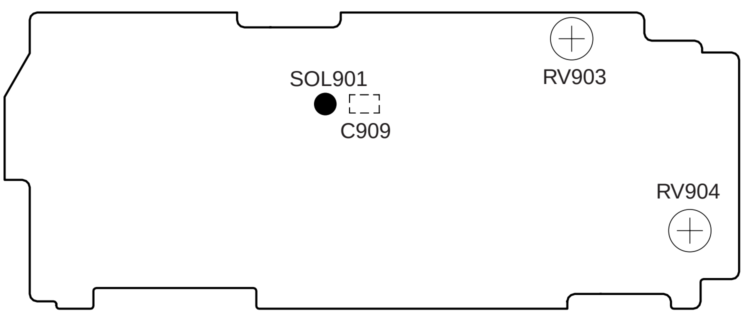
Adjusting method:

1) Rotate RV904, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section and the second darkest section of the gray scale cannot be differentiated.)

1-5-8. Horizontal Amplitude, Vertical Amplitude, Focus Check

"1-4-5. Horizontal Amplitude Adjustment" and "1-4-6. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform "1-4-7. Brightness, Contrast Adjustments" again.
Moreover, check the focus, and if it found to be vague, perform "1-4-3. Focus Adjustment" and "1-4-4. Aberration Adjustment".

VF-99 BOARD (SIDE A)



1-6. LCD SYSTEM ADJUSTMENT (TRV series)

Note1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

Note3: Set the brightness to the center using the LCD BRIGHT button.

Note4: LCD model:
PD-107board, Ref. No.5000 series

Note5: LCD model :
CCD-TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK

[Adjusting connector]

Most of the measuring points for adjusting the LCD display are concentrated in the following connector.
CN5501 of the PD-107 board (LCD model)
Connect the measuring instruments via the multi CPC jig (J-6082-311-A).
The following table shows the Pin No. and signal name of the connector.

Pin No.	Signal name	Pin No.	Signal name
1	VB	2	VCO VOLTAGE.
3	VG	4	PANEL COM
5	VR	6	N.C.
7	SYNC / HD	8	H START
9	GND	10	GND

1. LCD Initial Data Input

Mode	VTR stop
Signal	Arbitrary
Adjustment Page	E
Adjustment Address	A5 to A7, B0 to B9, BF, C0, C1, CF, D0 to DD

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: E, and input the data in the following table.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

3) Select page: 0, address: 01, and set data: 00.

Address	Data	Remark
A5	53	Fixed value
A6	96	Fixed value
A7	68	Fixed value
B0	3F	Fixed value
B1	C8	Fixed value
B2	1F	Fixed value
B3	1F	Fixed value
B4	00	Fixed value
B5	00	Fixed value
B6	B0	Fixed value
B7	4E	Fixed value
B8	08	Fixed value
B9	00	Fixed value
BF	80	Fixed value
C0	A4	Fixed value
C1	C9	Fixed value
CF	69	Bright adjustment
D0	7A	Color adjustment
D1	AA	White balance adjustment
D2	9C	White balance adjustment
D3	B1	Contrast adjustment
D4	B1	D range adjustment
D5	94	V-COM adjustment
D6	80	VCO adjustment
D7	80	V-COM level adjustment
D8	80	Fixed value
D9	00	Fixed value
DA	80	Fixed value
DB	52	Fixed value
DC	99	Fixed value
DD	99	Fixed value

2. VCO Adjustment (PD-107 board)

Set the VCO freerun frequency. If deviated, the LCD screen will be blurred.

Mode	VTR stop
Signal	No signal
Measurement point	Pin ② of CN5501 (VCO VOLTAGE) of PD-107 board
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	D6
Specified value	A = 2.75 ± 0.02V

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 00.
4) Select page: E, address: D6, change the data and set the VCO VOLTAGE (A) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
7) Select page: 0, address: 01, and set data: 00.

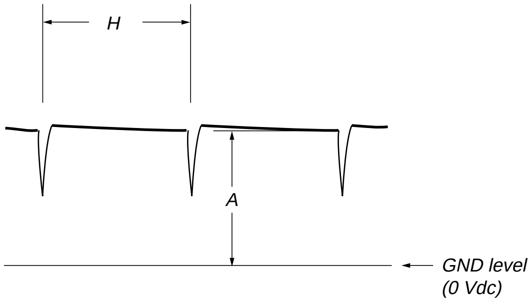


Fig. 5-1-22.

3. D range Adjustment (PD-107 board)

Set the D range of the RGB decoder used to drive the LCD to the specified value. If deviated, the LCD screen will become blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement point	Pin ③ of CN5501 (VG) of PD-107 board External trigger : Pin ④ of CN5501 (PANEL COM)
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	D4
Specified value	A = 3.62 ± 0.05V

Note1 : Press the DISPLAY button and erase the screen indictors on the LCD screen.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 00.
4) Select page: E, address: D4, change the data and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
7) Select page: 0, address: 01, and set data: 00.

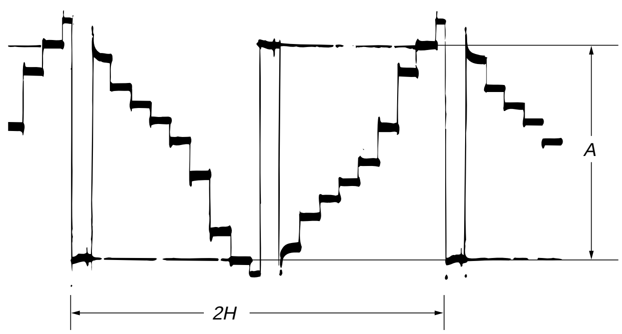


Fig. 5-1-23.

4. Bright Adjustment (PD-107 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement point	Pin ③ of CN5501 (VG) of PD-107 board External trigger : Pin ④ of CN5501 (PANEL COM)
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	CF
Specified value	A = 1.94 ± 0.05V

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 40.
4) Select page: E, address: CF, change the data and set the voltage (A) between the pedestal and white to the specified value. (The data of address: CF should be “41” to “BF”.)
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
7) Select page: 2, address: 7D, and set data: 00.
8) Select page: 0, address: 01, and set data: 00.

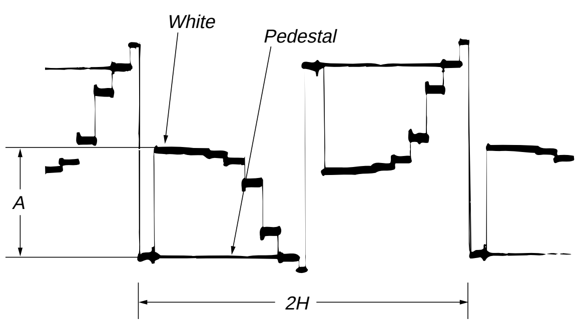


Fig. 5-1-24.

5. Contrast Adjustment (PD-107 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement point	Pin ③ of CN5501 (VG) of PD-107 board External trigger : Pin ④ of CN5501 (PANEL COM)
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	D3
Specified value	A = 3.52 ± 0.07V

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 00.
4) Select page: E, address: D3, change the data and set the voltage (A) between the pedestal (0 IRE) and 100 IRE to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
7) Select page: 0, address: 01, and set data: 00.

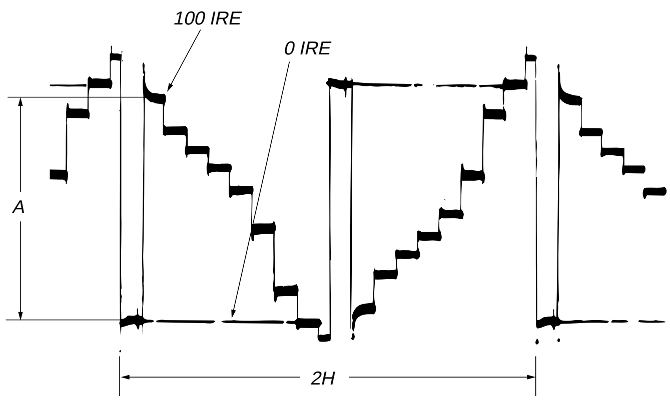


Fig. 5-1-25.

6. V-COM Adjustment (PD-107 board)

Set the common electrode drive signal level of LCD to the specified value.

Mode	VTR stop
Signal	No signal
Measurement point	Pin ④ of CN5501 (PANEL COM) of PD-107 board
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	D5
Specified value	A = 6.50 ± 0.05V

Note1 : Perform "Bright Adjustment" and "Contrast Adjustment" before this adjustment.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 00.
4) Select page: E, address: D5, change the data and set the PANEL COM signal level (A) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
7) Select page: 0, address: 01, and set data: 00.

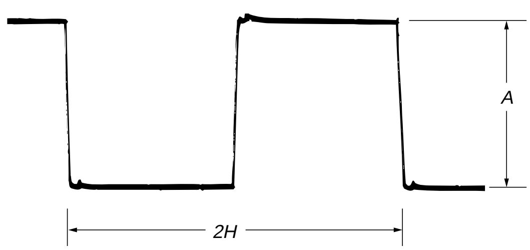


Fig. 5-1-26.

7. Color Adjustment (PD-107 board)

Set the color saturation to the standard value. If deviated, the color will be to dark or light.

Mode	VTR stop
Signal	No signal
Measurement point	Pin ③ of CN5501 (VG) of PD-107 board External trigger : Pin ④ of CN5501 (PANEL COM)
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	D0
Specified value	A = 0.07 ± 0.05V

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 57, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 20.
4) Select page: E, address: D0, change the data and set the voltage (A) between the green and white to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
7) Select page: 2, address: 7D, and set data: 00.
8) Select page: 0, address: 01, and set data: 00.

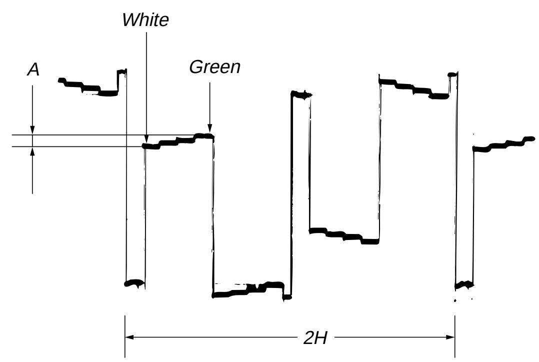


Fig. 5-1-27.

8. V-COM Adjustment (PD-107 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.
If deviated, the LCD display will move, producing flicker and conspicuous vertical lines.

Mode	VTR stop
Signal	No signal
Measurement point	Check on LCD display
Measuring instrument	
Adjustment page	E
Adjustment address	D7
Specified value	The brightness difference between the section Ⓐ and section Ⓑ is minimum.

Note1 : Perform "Bright Adjustment" and "Contrast Adjustment" before this adjustment.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 51, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 87.
4) Select page: E, address: D7, change the data so that the brightness of the section A and that of the section B is equal.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
7) Select page: 2, address: 7D, and set data: 00.
8) Select page: 0, address: 01, and set data: 00.

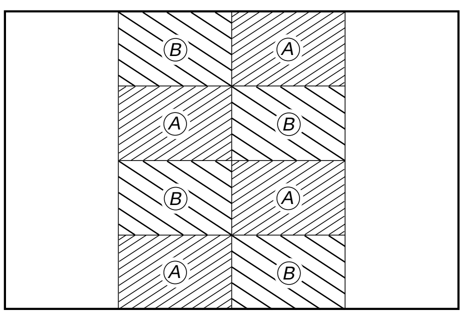


Fig. 5-1-28.

9. White Balance Adjustment (PD-107 board)

Correct the white balance.
If deviated, the LCD screen color cannot be reproduced.

Mode	VTR stop
Signal	No signal
Measurement point	Check on LCD display
Measuring instrument	
Adjustment page	E
Adjustment address	D1, D2
Specified value	The LCD screen should not be colored.

Note1: Check the white balance only when replacing the following parts. If necessary, adjust them.
1. LCD panel
2. Light induction plate
3. IC5502

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 51, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 02.
4) Select page: E, address: D1 and D2, and set the data to the initial value.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	Data
D1	94
D2	70

5) Check that the LCD screen is not colored. If colored, change the data of page: E, address: D1 and D2 so that the LCD screen is not colored.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
7) Select page: 2, address: 7D, and set data: 00.
8) Select page: 0, address: 01, and set data: 00.

5-2. MECHANICAL SECTION ADJUSTMENT

Mechanism Parts Adjustments

For details on the adjustments and checks of mechanical section and replacements of mechanism parts, refer to the separate volume- “8 mm Video Mechanism Adjustment Manual VII [B Mechanism] ”.

2-1. OPERATING WITHOUT A CASSETTE

1) Refer to “Section 2 DISASSEMBLY” and supply the power with the cabinet removed. (So that the mechanical deck can be operated.)
2) Connect the adjusting remote commander to the LANC terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Close the cassette compartment without loading a cassette and complete loading.
5) Select page: 0, address: 01, and set data: 01.
6) Select page: F, address: 2A, and set data: 01, and press the PAUSE button of the adjusting remote commander.
7) Select page: D, address: 10, and set data: 10, and press the PAUSE button of the adjusting remote commander.
8) Disconnect the power supply of the unit.
   By carrying out the above procedure, the unit can be operated without loading a cassette.
   Be sure to carry out “Processing after Operations” after checking the operations.
   Set the data of page: D, address: 10 to the following if the sensor ineffective mode, forced PLAYER (VTR) power supply ON mode or forced camera power supply ON mode are to be used together.
      Forced VTR power supply ON mode 12
      Forced camera power supply ON mode 11

[Processing after Operations]
1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 2A, and set data: 00, and press the PAUSE button of the adjusting remote commander.
3) Select page: D, address: 10, and set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 00.
5) Disconnect the power supply of the unit.

2-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustments
1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjusting remote commander to the LANC terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 01.
5) Select page: F, address: 2A, and set data: 04 and press the PAUSE button of the adjusting remote commander.
   (Be sure to perform “Processing after operations” after completing adjustments.)
6) Connect the oscilloscope.
   Channel 1: Pin ⑥ of CN910 of VC-215 board
   External trigger: Pin ⑪ of CN910 of VC-215 board
   (Connect the oscilloscope via the CPC-7 jig (J-6082-382-A).)
7) Playback the alignment tape for tracking. (WR5-1NP)
8) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit.
   If not flat, perform necessary adjustment according to the separate “8 mm Video Mechanical Adjustment Manual VII (B Mechanism)”.
9) Perform “Processing after operations”, after completing adjustments.

CN910 of VC-215 board

[Processing after operations]

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

1) Connect the adjusting remote commander, and turn on the HOLD switch.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: F, address: 2A, and set data: 00.
4) Press the PAUSE buttonA of the adjusting remote commander.
5) Select page: 0, address: 01, and set data: 00.
6) Remove the power supply from the unit.

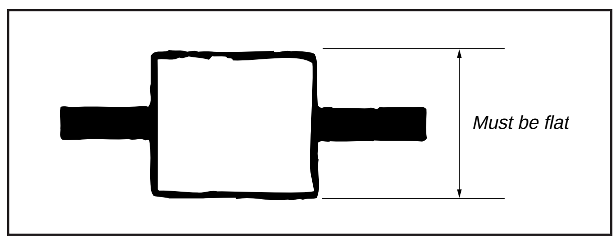


Fig. 5-2-1.

5-3. VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 5-60.

3-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

3-1-1. Equipments to be Used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    - For tracking adjustment (WR5-1NP)
      Part Code: 8-967-995-02
    - For video frequency characteristics adjustment
      (WR5-7NE) Part Code: 8-967-995-13
    - For checking Standard 8 mode operations
      For LP (WR5-4NL)
      Part Code: 8-967-995-51
      For SP (WR5-5NSP)
      Part Code: 8-967-995-42
      Note: The following alignment tapes can also be used.
      WR5-4NSP (8-967-995-41)
    - For checking Hi8 mode operations
      For SP (WR5-8NSE)
      Part Code: 8-967-995-43
      For LP (WR5-8NLE)
      Part Code: 8-967-995-52
    - For checking AFM stereo operations (WR5-9NS)
      Part Code: 8-967-995-23
      For checking BPF adjustment (WR5-11NS)
      Part Code: 8-967-995-71
12) Remote commander for adjustment (J-6082-053-B)
13) CPC-7 jig Part Code: J-6082-382-A
    Note : Connect the adjusting remote commander to the LANC jack, and set the HOLD switch to the “ADJ” side, or press the battery switch of the battery terminal using adhesive tape, etc.
14) Power code Part Code: J-6082-223-A
15) AFM DEV jig (J-6082-312-A)
16) IR Receiving jig (J-6082-383-A)
17) Extension cable (48P, 0.8mm) (J-6082-188-A)

3-1-2. Precautions on Adjusting

1) The adjustments of this unit are performed in the VTR mode or camera mode.
   To set to the VTR mode, set the power switch to "VTR" or set the "Forced VTR Power ON mode" using the adjusting remote commander (Note 1).
   To set to the Camera mode, set the power switch to "CAMERA" or set the "Forced Camera Power ON mode" using the adjusting remote commander (Note 2).
   After completing adjustments, be sure to exit the "Forced VTR Power ON Mode" or "Forced Camera Power ON Mode". (Note 3)
2) By setting the "Forced VTR Power ON mode" or "Forced Camera Power ON mode", the video section can be operate even if even if the front panel block (MA-345/346 board, power switch, microphone unit) has been removed. When removing the front panel block disconnect the following connector.
   1. VC-215 board CN916 (18P 0.5mm)
3) The lens block (CD-210/211 board) need not be connected except during battery end adjustment. To remove, disconnect the following connectors.
   1. VC-215 board CN501 (16P, 0.5mm)
   2. VC-215 board CN551 (23P, 0.5mm)
4) The video light model need not be assembled.If removing it. disconnect the following connect.
   1. VC-215 board CN909 (4P 0.8mm)
5) Cabinet (R) (Camera function switch (CF-60/61board), LCD block, viewfinder) need not be connected. But removing the cabinet (R) (removing the VC-215 board CN911) means removing the lithium 3V power supply (CF-60/61 board) , data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data and data on the history use. (Refer to the "Service Mode" for the data on the history use.) To remove the cabinet (R), disconnect the following connectors.
   1. VC-215 board CN911 (45P, 0.5mm)
   2. DD-117 board CN933 (10P, 1.0mm)

Note 1: Setting the "Forced VTR Power ON" mode (VTR mode)
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 02, and press the PAUSE button of the adjusting remote commander.

The above procedure will enable the VTR power to be turned on with the front panel block removed.
After completing adjustments, be sure to exit the "Forced VTR Power ON mode".

Note 2: Setting the "Forced Camera Power ON" mode (Camera mode)
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjusting remote commander.
   The above procedure will enable the camera power to be turned on with the front panel block removed.
   After completing adjustments, be sure to exit the "Forced Camera Power ON mode".

Note 3: Exiting the "Forced Power ON" mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjusting remote commander.
3) Select page: 0, address: 01, and set data: 00.

3-1-3. Adjusting Connectors

Some of the adjusting points of the video section are concentrated at VC-215 board CN910. Connect the measuring instruments via the CPC-7 jig (J-6082-382-A). The following table lists the pin numbers and signal names of CN910.

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

Table 5-3-1.

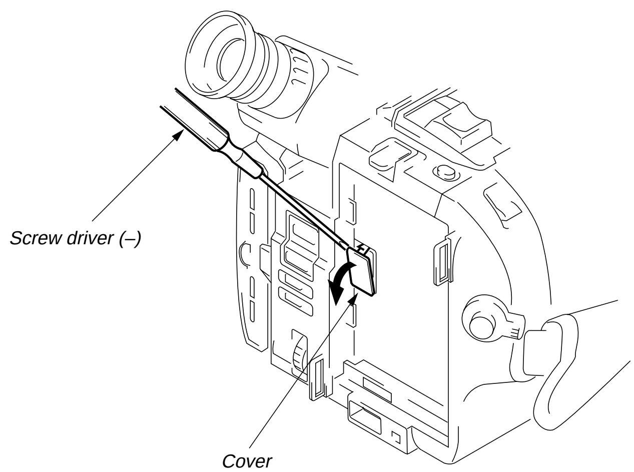


Fig. 5-3-1.

3-1-4. Connecting the Equipments

Connect the measuring instruments as shown in Fig. 5-3-2 and perform the adjustments.

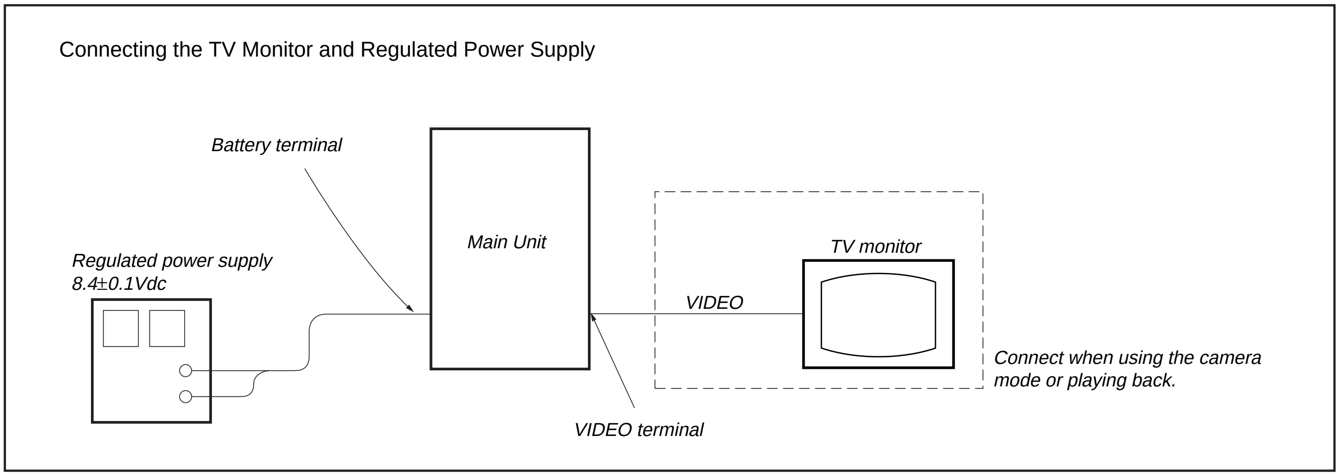


Fig. 5-3-2.

3-1-5. Alignment Tape

The following table lists alignment tapes which are available.
Use the tape specified in the signal column for each adjustment.
If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Record -ing mode	Tape type	Tape speed	Usage
Tracking WR5-1NP	Standard8	MP	SP	Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7NE	Hi8	ME	SP	Frequency characteristics adjustment
Operation check (SP mode) WR5-5NSP	Standard8	MP	SP	Checking operations
Operation check (SP mode) WR5-8NSE	Hi8	ME	SP	
Operation check (LP mode) WR5-4NL	Standard8	MP	LP	
Operation check (LP mode) WR5-8NLE	Hi8	ME	LP	
AFM stereo Operation check WR5-9NS	Standard8	MP	SP	AFM stereo Checking operations
BPF adjustment WR5-11NS	Standard8	MP	SP	BPF adjustment

Tape type
MP ..... Particle type metal tape
ME ..... Evaporated type metal tape

Table 5-3-2.

Fig. 5-3-3. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the VIDEO terminal (Terminated at 75 Ω).

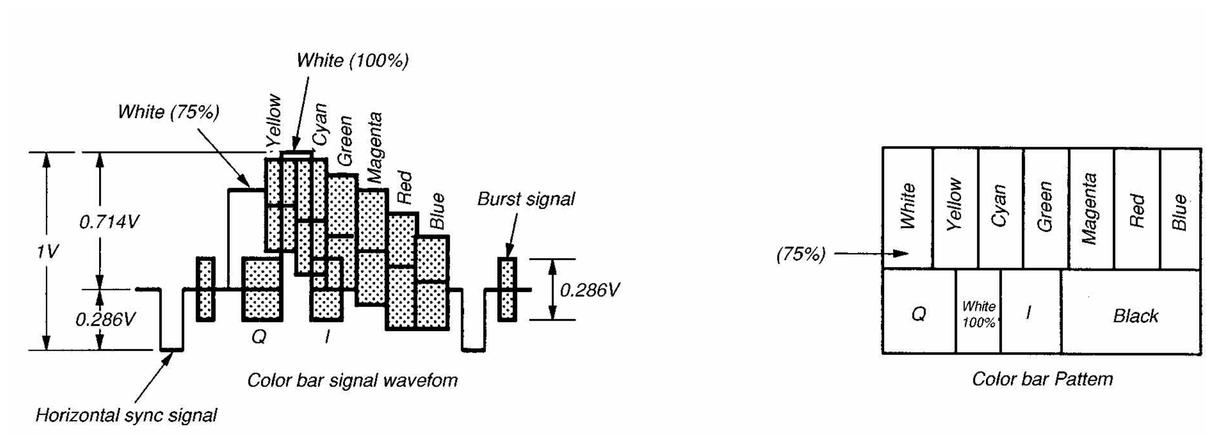


Fig. 5-3-3. Color Bar Signals of the Alignment Tape

3-1-6. Output Level and Impedance

Video output

Phono jack, 1 Vp-p, 75Ω,
unbalanced, sync negative

Audio output

Phono jack, –7.5 dBs, (at load impedance 47 kΩ),
impedance less than 2.2 kΩ

3-1-7. Recording Mode (Standard 8/Hi8) switching (Hi8 model)

The record mode (Standard 8/Hi8) of this unit switches as shown in the following table. The playback mode (Standard 8/Hi8) switches automaticaly according to the recording mode of the tape played back.

Tape Used	Recording Mode
ME	Hi8
Hi8 MP	
MP	Standard 8

3-1-8. Service Mode

Additional note on adjustment

Note: After the completion of the all adjustments, cancell the service mode by either of the following ways.

1) Unplug the main power supply and remove the lithium battery. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting.)
2) After data on page: D and F is restored, select page: 0, address: 01, and return the data to 00. And when data on page: 3 is changed, return the data to the original condition.

1. Test mode setting

Set/release each test mode. Select page: 0, address: 01, and set data: 01 before setting the data of page D and F.

Page F	Address 2A

Data	Function
00	Normal
01	Test mode Various emergency prohibitions and releases Drum emergency, capstan emergency, loading motor emergency, reel emergency, tape top and end, DEW detection

Page D	Address 10

Data	Function
00	Normal
01	Camera power ON
02	VTR power ON
03	Camera+VTR power ON

* For page D and F, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that, in this case, the test mode will not be released even if the main power has been turned off (8.4 Vdc).

* Be sure to return this address data to 00 after completing adjustments/repairs and press the PAUSE button of the adjusting remote commander. And select page: 0, address: 01, and set data: 00.

2. Emergency Memory Address

Page F	Address 10 to 1B

Address	Contents
10	1st EMG code
12	Upper: MSW code when the mechanism starts shifting the 1st time Lower: MSW code when the 1st emergency occurs
13	Lower: Target MSW code of the 1st emergency occurs
14	2nd EMG code
16	Upper: MSW code when the mechanism starts shifting the 2nd time Lower: MSW code when the 2nd emergency occurs
17	Lower: Target MSW code of the 2nd emergency occurs
18	Last EMG code
1A	Upper: MSW code when the mechanism starts shifting the last time Lower: MSW code when the last emergency occurs
1B	Lower: Target MSW code of the last emergency occurs

When there are no emergency, data 00 will be written in the above addresses (10 to 1B). When the first emergency occurs, the data corresponding to the emergency will be written in the address (10 to 13) for this first emergency. In the same way, when the second emergency occurs, the data corresponding to the emergency will be written in the address (14 to 17) for this second emergency.
The data corresponding to the emergency occurring the last will be written in the address (18 to 1B) for this last emergency.
Therefore the data of addresses 18 to 1B are renewed each time an emergency occurs.

Note 1: Be sure to rewrite the data of addresses 10 to 1B to 00 after repairs/adjustments.
Note 2: When rewriting the data, be sure to press the PAUSE buttton of the remote commander after setting the data.

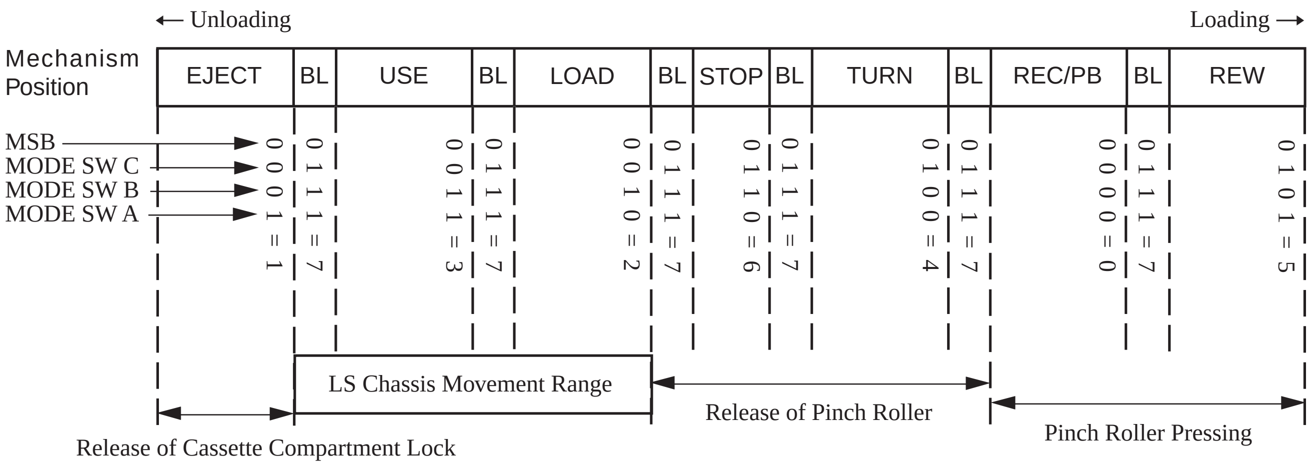
2-1. EMG CODE (Emergency Code)

The codes shown in the following table which correspond to errors that occur are recorded in addresses 10, 14, and 18.

Code	Type of Emergency
00	No error
10	Loading motor time-out during load
11	Loading motor time-out during unload
20	T reel emergency (reel slack) during unloading
21	S reel emergency (reel slack) during unloading
22	T reel emergency
23	S reel emergency
30	FG emergency at the start up of the capstan
31	FG emergency during the normal rotation of the capstan
40	FG emergency at the start up of the drum
41	PG emergency at the start up of the drum
42	FG emergency during the normal rotation of the drum
43	PG emergency during the normal rotation of the drum
44	Phase emergency during the normal rotation of the drum

2-2. MSW Codes

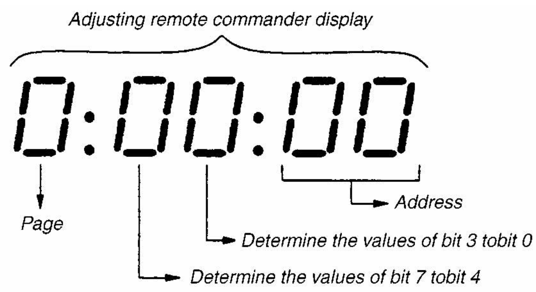
- The lower parts of the data of addresses 12, 16 and 1A represent the MSW codes (mode switch, mechanism position) when errors occurs.
- The upper parts of the data of addresses 12, 16 and 1A represent, when the mechanism position is to be moved, the MSW codes at the start of movement (when moving the loading motor).
- The lower parts of the data of addresses 13, 17 and 1B represent the MSW codes of the desired movement when the mechanism position is to be moved.



Mechanism Position	MSW Code	Contents
EJECT	1	Position at which the cassette compartment lock is released. The mechanism will not move any further in the unloading direction.
BL	7	BLANC code. Between two codes. The mechanism will not be stopped by this code while it is operating.
USE	3	EJECT completion position. When the cassette is ejected, the mechanism will stop at this position.
LOAD	2	Code during loading/unloading. Code that is used while the LS chassis is moving.
STOP	6	Normal stop position. The pinch roller separates, the tension regulator returns, and the brakes of both reels turn on.
TURN	4	Position at which is used when the pendulum gear swings from S to T or from T to S.
RECP/PB	0	PB, REC, CUE, REV, PAUSE, FF positions. The pinch roller is pressed and tension regulator is on.
REW	5	REW position. REW are carried at this position. The mechanism will not move any further in the loading direction.

3. Bit value discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is “1” or “0”.



	Remote controller display	Bit value			
		bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ→	8	1	0	0	0
	9	1	0	0	1
	A (A)	1	0	1	0
	B (b)	1	0	1	1
	C (c)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ→	E (E)	1	1	1	0
	F (F)	1	1	1	1

(Example) If the remote commander display data is “8E”, bit values from bit7 to bit4 can be discriminated from column Ⓐ, and those from bit3 to bit0 from column Ⓑ.

4. Switch check (1)

Page 3	Address 43

Bit	Function	When bit value=1	When bit value=0
0	VTR MODE SW	OFF	ON
1	CAM MODE SW	OFF	ON
2	START/STOP SW	OFF	ON
3	EJECT SW	OFF	ON
4	CC DOWN SW	OFF	ON
5			
6			
7			

Using method:

1) Select page: 3, address: 43.
2) By discriminating the bit value of display data, the state of the switches can be discriminated.

5. Switch check (2)

Page 3	Address 60 to 66

Using method:
1) Select page: 3, address: 60 to66.
2) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00 to 0D	0E to 29	2A to 46	47 to 68	69 to 90	91 to BE	BF to EA	EB to FF
60 (AD0: IC604 (93))	LASER LINK (FK-8500 S008)	STOP (FK-8500 S001)	FF (FK-8500 S003)		EDIT SEARCH (+) (FK8500 S009)	EDIT SEARCH (–) (FK8500 S010)		No key input
61 (AD1: IC604 (94))		PAUSE (FK-8500 S002)	REW (FK-8500 S004)	PLAY (FK-8500 S006)				No key input
62 (AD2: IC604 (95))		PICTURE EFFECT (CF-60/61 S006)	MENU (CF-60/61 S010)	EXECUTE (CF-60/61 S015)	TIME (CF-60/61 S021)	5sec REC (CF-60/61 S024)	PUSHING REC (CF-60/61 S024)	NORMAL REC (CF-60/61 S024)
63 (AD3: IC604 (96))	PROGRAM AE SPOT LIGHT (CF-60 S020)	PROGRAM AE PORTRAIT (CF-60 S020)	PROGRAM AE SPORT LESSON (CF-60 S020)	PROGRAM AE BEACH & SKI (CF-60 S020)	PROGRAM AE SUNSET & MOON (CF-60 S020)	PROGRAM AE LANDSCAPE (CF-60 S020)		PROGRAM AE AUTO (CF-60 S020)
64 (AD4: IC604 (97))			EXPOSURE (CF-60/61 S012)	BACK LIGHT (CF-60/61 S017)	FADER (MF-8500 S002)	FOCUS INFINITY (MF-8500 S001)	FOCUS AUTO (MF-8500 S001)	FOCUS MANUAL (MF-8500 S001)
65 (AD5: IC604 (98))	DATE (CF-60/61 S003)	COUNTER RESET (CF-60/61 S008)	END SEARCH (CF-61 S013)	TITLE (CF-60/61 S018)	DISPLAY (CF-61 S022)			No key input
66 (AD6: IC604 (99))	PROGRAM AE (CF-61 S004)	BRIGHT(+) (PD-107 S5801)	BRIGHT(–) (PD-107 S5802)	VOLUME(+) (PD-107 S5803)	VOLUME(–) (PD-107 S5804)	PANEL REVERSE (FP-642)	PANEL CLOSE (FP-642)	PANEL NORMAL (FP-642)

6. Headphone jack check

Page 3	Address 45

Bit	Function	When bit value=1	When bit value=0
1	Headphone jack	Headphone jack is used	

Using method:
1) Select page: 3, address: 45.
2) By discriminating the bit value of display data, the state of the headphone jack can be discriminated.

7. Input/output selection check

Page 3	Address 49

Bit	Function	When bit value=1	When bit value=0
1			
2			
3			
4	MIC jack		MIC jack is used
5	AUDIO terminal	Monaural	
6	VIDEO terminal	VIDEO terminal is used	

Using method:
1) Select page: 3, address: 49.
2) By discriminating the bit value of display data, the state of the input/output selection can be discriminated.

8. LED, LCD (display window) check

Page 3	Address 05	Bit5

Using method:

1) Select page: 3, address: 05, and set the bit value of Bit5 to “1”.
2) Check that all LED are lit and all segments of LCD (display window) are lit.
3) Select page: 3, address: 05, and set the bit value of Bit5 to “0”.

9. Record of Use Check

Page 3	Address A2 to AA

Address	Function		Remarks
A2	Drum rotation counted time (BCD code)	Hour (H)	1000th place digit and 100th place digit of counted time (decimal digit)
A3		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
A4		Minute	
A5	User initial power on date (BCD code)	Year	After setting the clock, set the date of power on next
A6		Month	
A7		Day	
A8	Final condensation occurrence date (BCD code)	Year	
A9		Month	
AA		Day	

Using method:

1) The record of use data is displayed at page 3, addresses: A2 to AA.

Note: This data will be erased when the coin lithium battery is removed (reset).

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENT

1. Initialization of D, E, F Page Data

If the D, E, F page data is erased due to some reason, perform "1-2. INITIALIZATION OF D, E, F PAGE DATA", of "5-1. CAMERA SECTION ADJUSTMENT".

2. Battery End Adjustment (VC-215 board)

Set the battery end voltage.
If the voltage is incorrect, the life of the battery will shorten.
The image at the battery end will also be rough.

Mode	Camera recording
Subject	Arbitrary
Measurement Point	LCD display of the adjusting remote commander
Measuring Instrument	
Adjustment Page	D
Adjustment Address	30 to 34

Note 1: The lens block and cabinet (R) must be connected.

Switch setting
1) AUTO FOCUS .... OFF
2) LCD screen .... Closed
3) NIGHT SHOT .... OFF
4) VIDEO LIGHT .... OFF
(VIDEO LIGHT model)

Connection:
1) Connect the regulated power supply and the digital voltmeter to the battery terminal as shown in Fig. 5-3-4.

Adjusting method:
1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.1±0.1Vdc.
2) Turn off the power supply.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Turn on the power supply.
5) Load a cassette, and set to the camera recording mode.
6) Select page: 0, address: 01, and set data: 01.
7) Decrease the output voltage of the regulated power supply so that the digital voltmeter display is 5.30±0.01Vdc.
8) Select page: 0, address: FF, data: 00 (section 00)
9) Select page: 3, address: 5D, read the data, and this data is named Dref.
10) Select page: D, address: 30, set data: Dref, and then press the PAUSE button of the adjusting remote commander.
11) Convert Dref to decimal notation, and obtain Dref '. (Refer to Table 5-1-2. "Hexadecimal-decimal conversion table")
12) Calculate D_{31}', D_{32}', D_{33}' and D_{34}' using following equations (decimal calculation), convert it to a hexadecimal number, and input each adjustment address.

Address: 31 $D_{31}' = Dref' + 5$
Address: 32 $D_{32}' = Dref' + 20$
Address: 33 $D_{33}' = Dref' + 35$
Address: 34 $D_{34}' = Dref' + 40$

Note 3: After setting each data, be sure to press the PAUSE button.

13) Select page: 3, address: FO, "read the data", and Select page: D, address: 5F, set data: "read data" and the press the PAUSE button of the adjusting remote commander.
14) Select page: 0, address: 01, and set data: 00.

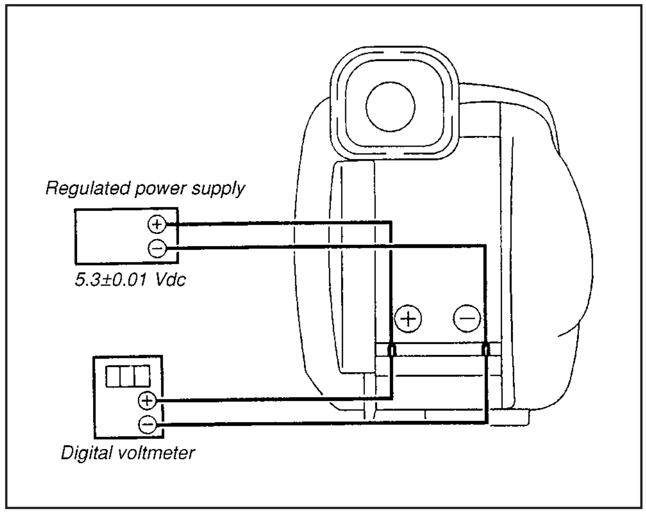


Fig. 5-3-4.

3-3. SERVO SYSTEM ADJUSTMENTS

1. CAP FG Offset Adjustment (VC-215 board)

Improve the capstan servo characteristic. If it is not correct. jitters will increase.

Mode	Camera recording (SP mode)
Subject	Arbitrary
Measurement Point	Pin ⑫ of CN910 (CAP FG)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	69
Specified value	Duty = 50±0.5%

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 2, address: 01, and set data: 81, and press the PAUSE button of the adjustment remote commander. (to start up automatic CAP FG offset adjustment.)
3) Select page: 2, address: 02, and check that the data is “01”.
4) Check that Duty of CAP FG signal satisfies the specified value. If not, select page: 2, address: 01, set data: 00, and press the PAUSE button, and then, repeat steps 2) to 4).
5) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjustment remote commander.
6) Select page: 0, address: 01, and set data: 00.

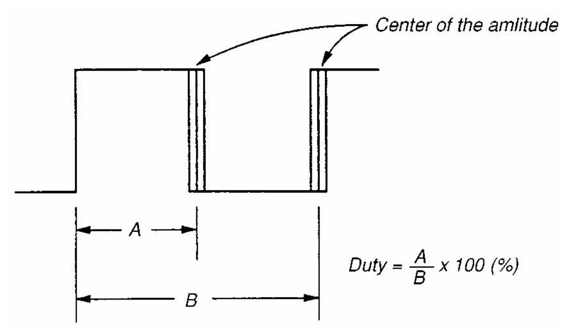


Fig. 5-3-5.

2. RF Switching Position Adjustment (VC-215 Board)

If deviated in this case causes switching noise or jitter on the played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment WR5-1NP
Measurement Point	CH1: Pin ⑪ of CN910 (RF SWP) CH2: Pin ⑥ of CN910 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	7C (upper digits), 7D (lower digits)
Specified Value	t1 = 0±10μsec

Adjusting Method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 2A, and set data: 20, and press the PAUSE button of the adjustment remote commander.
3) Select page: F, address: 7C, change the data and minimize “t1”, and then press the PAUSE button of the adjustment remote commander. (Coarse adjustment)
4) Select page: F, address: 7D, change the data and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
5) Press the PAUSE button of the adjustment remote commander.
6) Select page: F, address: 2A, and set data: 00, and press the PAUSE button of the adjustment remote commander.
7) Select page: 0, address: 01, and set data: 00.

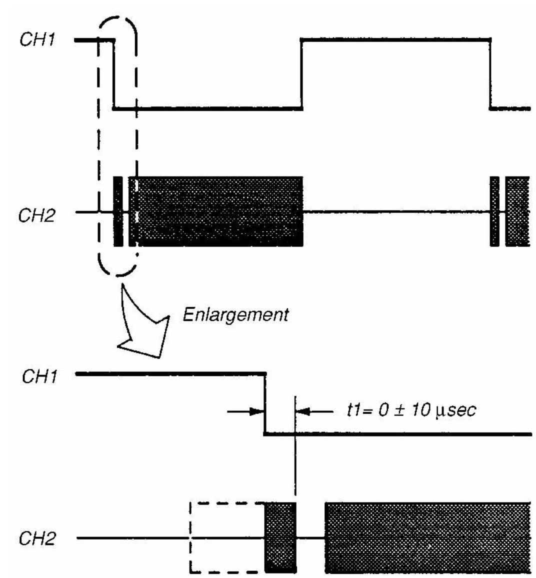


Fig. 5-3-6.

3-4. VIDEO SYSTEM ADJUSTMENTS

Video system adjustments must be performed in the following order.

[Adjusting Order]

1. 28MHz origin oscillation adjustment
2. AFC f0 adjustment
3. Filter f0 adjustment
4. Y OUT level adjustment
5. C OUT level adjustment
6. RP filter f0 adjustment
7. Hi8 REC Y current adjustment
8. Standard REC Y current adjustment
9. Hi8 REC L level adjustment
10. Standard8 REC L level adjustment
11. REC C current adjustment

1. 28 MHz Origin Oscillation Adjustment (VC-215 board)

Set the frequency of the clock for synchronization.
If deviated, the synchronization will be disrupted and the color will become inconsistent.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ⑯ of IC202 or pin ⑫ of IC501
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	2C
Specified Value	Pin ⑯ of IC202 : f=3579545±17Hz Pin ⑫ of IC501 : f=14318181±68Hz

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 2, address: 61, and set data: 30.
3) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
4) Select page: F, address: 2C, change the data and set the clock frequency(f) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 2, address: 61, and set data: 10.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

2. AFC f0 Adjustment (VC-215 board)

Adjust the pull-in range of the A/D converted clock generator during playback.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ④ of CN910 (AFC f0)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	4A
Specified Value	A = 2.10±0.05Vdc

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 4D, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 4A, change the data and set the DC voltage (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

3. Filter f0 Adjustment (VC-215 board)

Minimize the chroma signal residual components during composite video signal input.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ③ of CN910 (IR VIDEO)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	4D
Specified Value	Minimum residual chroma signal components (A = Bellow 35mV)

Switch setting:

LASER LINK .... ON (Red LED is lit)

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 4F, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 4D, change the data and minimize the residual chroma signal components (A).
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

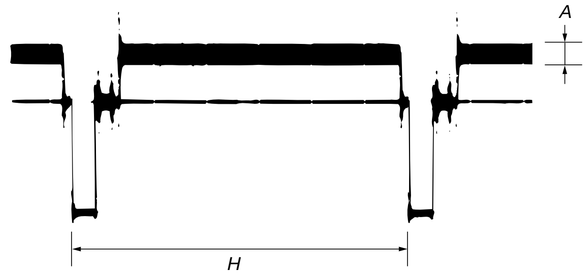


Fig. 5-3-7.

4. Y OUT Level Adjustment (VC-215 board)

Set the Y signal output level.

Mode	VTR stop
Signal	No signal
Measurement Point	VIDEO terminal (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	49
Specified Value	A = 286±5mV

Note 1 : Hi8 model
CCD-TR516/TR516PK/TR716
CCD-TRV36/TRV36PK/TRV43/TRV46/TRV46PK
: Standard8 model
CCD-TR315/TR416/TR416PK
CCD-TRV16/TRV16PK

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 61, and set data: 30, and press the PAUSE button of the adjusting remote commander.
4) Select page: F, address: 49, change the data and set the SYNC level (A) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 2, address: 61, and set data: 10.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 01, and set data: 00.

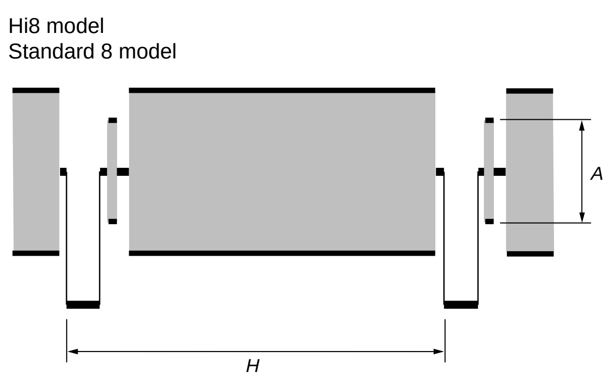


Fig. 5-3-8.

5. C OUT Level Adjustment (VC-215 board)

Set the chroma signal output level.

Mode	VTR stop
Signal	No signal
Measurement Point	VIDEO terminal (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	4B
Specified Value	A = 286±5mV

Note 1 : Hi8 model
CCD-TR516/TR516PK/TR716
CCD-TRV36/TRV36PK/TRV43/TRV46/TRV46PK
: Standard8 model
CCD-TR315/TR416/TR416PK
CCD-TRV16/TRV16PK

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 61, and set data: 30, and press the PAUSE button of the adjusting remote commander.
4) Select page: F, address: 4B, change the data and set the burst level (A) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 2, address: 61, and set data: 10.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 01, and set data: 00.

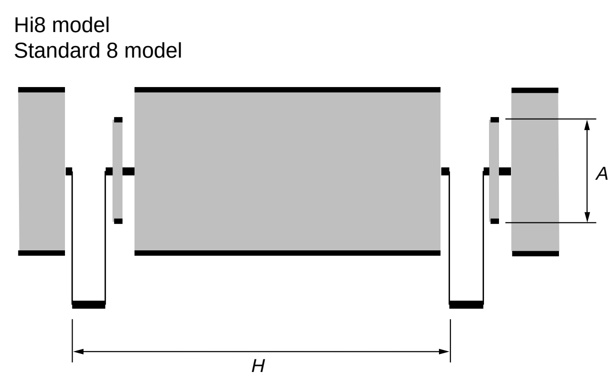


Fig. 5-3-9.

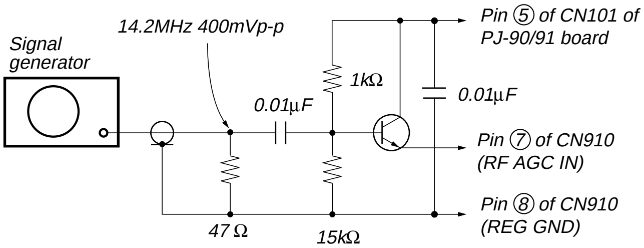
6. RP Filter f0 Adjustment (VC-215 board)

Adjust the LPF of the playback RF amplifier.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ⑨ of CN910 (RF AGC OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	4E
Specified Value	A = Below 10mVp-p

Connection:

1) Input a 14.2MHz, 400mVp-p CW signal to Pin ⑦ of CN910 (RF AGC IN).



Transistor : General NPN transistor (2SC403. etc)
47 Ω resistor : 1-249-401-11
1k Ω resistor : 1-249-417-11
15k Ω resistor : 1-249-431-11
0.01µF capacitor : 1-101-004-00

Fig. 5-3-10.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 35, and press the PAUSE button of the adjusting remote commander.
3) Only for Standard8 model, select page: D, address: 15, after memorizing the data , set the bit value of bit0 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service mode”).
4) Select page: F, address: 4E, change the data and minimize the 14.2 MHz signal level (A).
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: D, address: 15, and set the data memorized at step 3), and press the PAUSE button of the adjusting remote commander..
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 01, and set data: 00.

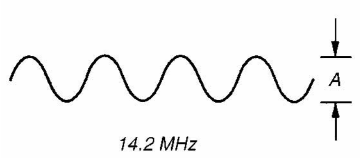


Fig. 5-3-11.

7. Hi8 REC Y Current Adjustment (VC-215 board)
CCD-TR516/TR516PK/TR716
CCD-TRV36/TRV36PK/TRV43/TRV46/TRV46PK

Adjust the Y FM signal recording current.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	53 to 5A
Specified Value	A = 170±5mV

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service mode”).
3) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to “0”.
4) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-117 board and GND with 4.7kΩ registor for a second.)
   4.7kΩ registor : 1-249-425-11
5) Insert a tape, set to recording mode.
6) Select page: 0, address: 01, and set data: 01.
7) Select page: F, address: 5C, after note down the data , set data: FF, and press the PAUSE button of the adjusting remote commander.
8) Select page: F, address: 65, after note down the data , set data: 00, and press the PAUSE button of the adjusting remote commander.
9) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
10) Select page: F, address: 54, change the data and set the Y signal level (A) to the specified value.
11) Press the PAUSE button of the adjusting remote commander.
12) Select page: F, address: 54, and read the data (D_{54}).
13) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)
    Address: 53 $D_{53} = D_{54}$
    Address: 55 $D_{55} = D_{54}$
    Address: 56 $D_{56} = D_{54}$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

14) Write the following data in page: F, address: 57 to 5A.

Address	Data
57	9A
58	80
59	9A
5A	80

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

15) Select page: F, address: 5C, set the data noted down at step 3), press the PAUSE button of the adjusting remote commander.
16) Select page: F, address: 65, set the data noted down at step 4), press the PAUSE button of the adjusting remote commander.
17) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
18) Select page: 0, address: 01, and set data: 00.
19) Select page: 0, address: 01, and set data: 01.
20) Select page: D, address: 14, and set the data memorized at step 2) of “Preparations only for the model without REC switch”.
21) Press the PAUSE button of the adjusting remote commander.
22) Select page: D, address: 15, and set the data memorized.
23) Press the PAUSE button of the adjusting remote commander.
24) Select page: 0, address: 01, and set data: 00.

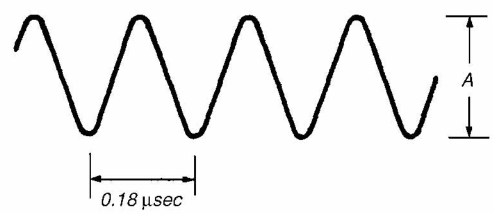


Fig. 5-3-12.

8. Standard8 REC Y Current Adjustment (VC-215 board)
CCD-TR315/TR416/TR416PK
CCD-TRV16/TRV16PK

Adjust the Y FM signal recording current.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	53 to 5A
Specified Value	A = 170±5mV

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to "1". (Refer to "3. Bit value discrimination" of "3-1-8. Service mode").
3) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to "0".
4) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-117 board and GND with 4.7kΩ registor for a second.)
   4.7kΩ registor : 1-249-425-11
5) Insert a tape, set to recording mode.
6) Select page: 0, address: 01, and set data: 01.
7) Select page: F, address: 5C, after note down the data , set data: FF, and press the PAUSE button of the adjusting remote commander.
8) Select page: F, address: 65, after note down the data , set data: 00, and press the PAUSE button of the adjusting remote commander.
9) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
10) Select page: F, address: 54, change the data and set the Y signal level (A) to the specified value.
11) Press the PAUSE button of the adjusting remote commander.
12) Select page: F, address: 54, and read the data (D_{54}).
13) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)
    Address: 53 $D_{53} = D_{54}$
    Address: 55 $D_{55} = D_{54}$
    Address: 56 $D_{56} = D_{54}$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

14) Write the following data in page: F, address: 57 to 5A.

Address	Data
57	80
58	80
59	80
5A	80

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

15) Select page: F, address: 5C, set the data noted down at step 3), press the PAUSE button of the adjusting remote commander.
16) Select page: F, address: 65, set the data noted down at step 4), press the PAUSE button of the adjusting remote commander.
17) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
18) Select page: 0, address: 01, and set data: 00.
19) Select page: 0, address: 01, and set data: 01.
20) Select page: D, address: 14, and set the data memorized.
21) Press the PAUSE button of the adjusting remote commander.
22) Select page: D, address: 15, and set the data memorized.
23) Press the PAUSE button of the adjusting remote commander.
24) Select page: 0, address: 01, and set data: 00.

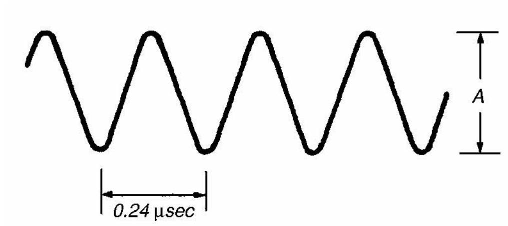


Fig. 5-3-13.

9. Hi8 REC L Level Adjustment (VC-215 board) CCD-TR516/TR516PK/TR716 CCD-TRV36/TRV36PK/TRV43/TRV46/TRV46PK

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorated, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	5B to 64
Specified Value	A = 10.1±0.6mV

Connection:
1) Remove C085 (0.01µF, Pin ⑯ of IC202).

Note: After completing “REC L Level Adjustment” and “REC C Current Adjustment”, replace C085 with new parts (1-162-970-11 CERAMIC CHIP 0.01µF 10% 25V).

Adjusting method:
1) Insert Hi8 ME tape.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service mode”).
4) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to “0”.
5) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-117 board and GND with 4.7kΩ registor for a second.)
   4.7kΩ registor : 1-249-425-11
6) Insert Hi8 ME tape, set to recording mode.
7) Select page: 0, address: 01, and set data: 01.
8) Select page: F, address: 5B, set data: FF, and press the PAUSE button of the adjusting remote commander.
9) Select page: F, address: 65, set data: 00, and press the PAUSE button of the adjusting remote commander.
10) Select page: F, address: 5C, change the data and set the REC AFM signal level (A) to the specified value.
11) Press the PAUSE button of the adjusting remote commander.
12) Select page: F, address: 5C, read the data (D_{5C}).
13) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)
    - Address: 5B $D_{5B} = D_{5C}$
    - Address: 5D $D_{5D} = D_{5C}$
    - Address: 5E $D_{5E} = D_{5C}$
    - Address: 5F $D_{5F} = D_{5C} + 14$
    - Address: 60 $D_{60} = D_{5C} + 14$
    - Address: 61 $D_{61} = D_{5C} + 14$
    - Address: 62 $D_{62} = D_{5C} + 14$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

14) Write the following data in page: F, address: 63 to 64.

Address	Data
63	7C
64	7C

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

15) Select page: 0, address: 01, and set data: 00.
16) Perform “REC C Current Adjustment”.
17) Select page: 0, address: 01, and set data: 01.
18) Select page: D, address: 14, and set the data memorized.
19) Press the PAUSE button of the adjusting remote commander.
20) Select page: D, address: 15, and set the data memorized at step 4) of “Preparations only for the model without REC switch”.
21) Press the PAUSE button of the adjusting remote commander.
22) Select page: 0, address: 01, and set data: 00.

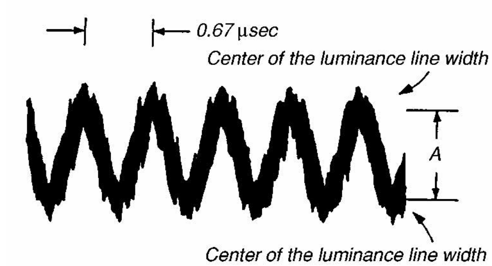


Fig. 5-3-14.

10. Standard8 REC L Level Adjustment (VC-215 board) CCD-TR315/TR416/TR416PK CCD-TRV16/TRV16PK

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorated, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	5B to 64
Specified Value	A = 9.3±0.5mV

Connection:
1) Remove C085 (0.01µF, Pin ⑯ of IC202).

Note: After completing “REC L Level Adjustment” and “REC C Current Adjustment”, replace C085 with new parts (1-162-970-11 CERAMIC CHIP 0.01µF 10% 25V).

Adjusting method:
1) Insert Srandrd8 MP tape.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service mode”).
4) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to “0”.
5) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-117 board and GND with 4.7kΩ registor for a second.)
   4.7kΩ registor : 1-249-425-11
6) Insert Srandrd8 MP tape, set to recording mode.
7) Select page: 0, address: 01, and set data: 01.
8) Select page: F, address: 5B, set data: FF, and press the PAUSE button of the adjusting remote commander.
9) Select page: F, address: 65, set data: 00, and press the PAUSE button of the adjusting remote commander.
10) Select page: F, address: 5C, change the data and set the REC AFM signal level (A) to the specified value.
11) Press the PAUSE button of the adjusting remote commander.
12) Select page: F, address: 5C, read the data (D_{5C}).
13) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)
    Address: 5B $D_{5B} = D_{5C}$
    Address: 5D $D_{5D} = D_{5C}$
    Address: 5E $D_{5E} = D_{5C}$
    Address: 5F $D_{5F} = D_{5C}$
    Address: 60 $D_{60} = D_{5C}$
    Address: 61 $D_{61} = D_{5C}$
    Address: 62 $D_{62} = D_{5C}$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

14) Write the following data in page: F, address: 63 to 64.

Address	Data
63	80
64	80

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

15) Select page: 0, address: 01, and set data: 00.
16) Perform “REC C Current Adjustment”.
17) Select page: 0, address: 01, and set data: 01.
18) Select page: D, address: 14, and set the data memorized at step 3) of “Preparations only for the model without REC switch”.
19) Press the PAUSE button of the adjusting remote commander.
20) Select page: D, address: 15, and set the data memorized.
21) Press the PAUSE button of the adjusting remote commander.
22) Select page: 0, address: 01, and set data: 00.

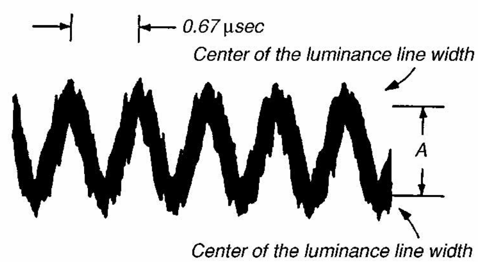


Fig. 5-3-15.

11. REC C Current Adjustment (VC-215 board)

Set the recording current levels of the REC Chroma signal. If it is too low, chroma signal noise in played back picture will increased. If too high, Y signal noises will increase and white modulation noises will be produced.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	65
Specified Value	Hi8 model : A = 34.6±1.2mV Standard8 model : A = 30.0±1.1mV

Note 1: Hi8 model: CCD-TR516/TR516PK/TR716
CCD-TRV36/TRV36PK/TRV43/TRV46/TRV46PK
Standard8 model: CCD-TR315/TR416/TR416PK
CCD-TRV16/TRV16PK

Connection:
1) Remove C085 (0.01µF, Pin ⑯ of IC202).

Note: After completing "REC L Level Adjustment" and "REC C Current Adjustment", replace C085 with new parts (1-162-970-11 CERAMIC CHIP 0.01µF 10% 25V).

2) Connect Pin ① of IC001 and GND with a 0.01F capacitor.
0.01µF capacitor: 1-101-004-00

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to "1". (Refer to "3. Bit value discrimination" of "3-1-8. Service mode").
3) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to "0".
4) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-117 board and GND with 4.7kΩ registor for a second.)
4.7kΩ registor : 1-249-425-11
5) Insert a tape, set to recording mode.
6) Select page: 0, address: 01, and set data: 01.
7) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
8) Select page: 2, address: 61, and set data: 30.
9) Select page: F, address: 65, change the data and set the REC chroma signal level (A) to the specified value.
10) Press the PAUSE button of the adjusting remote commander.
11) Select page: 2, address: 61, and set data: 10.
12) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
13) Select page: 0, address: 01, and set data: 00.
14) Select page: 0, address: 01, and set data: 01.
15) Select page: D, address: 14, and set the data memorized at step 2) of "Preparations only for the model without REC switch".
16) Press the PAUSE button of the adjusting remote commander.
17) Select page: D, address: 15, and set the data memorized.
18) Press the PAUSE button of the adjusting remote commander.
19) Select page: 0, address: 01, and set data: 00.

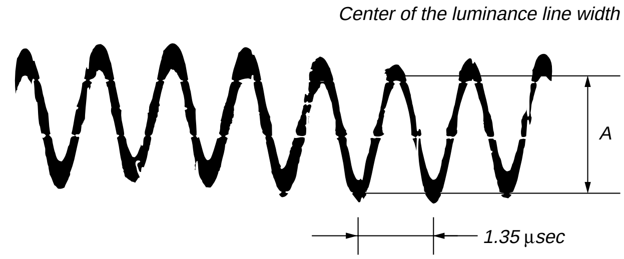


Fig. 5-3-16.

3-5. IR TRANSMITTER ADJUSTMENTS (CCD-TRV43/TRV46/TRV46PK)

Adjust using a IR receiver jig (J-6082-383-A).

Switch setting:
LASER LINK .... (Red LED is lit)

1. IR Video Carrier Frequency Adjustment (VC-215 board)

Mode	Camera standby
Subject	Arbitrary
Measurement Point	Pin ⑤ of CN003 of IR receiver jig (RF) (Or Pin ⑯ of IC751 of VC-215 board)
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	68
Specified Value	f = 11.85±0.05MHz

Connection of Equipment
Connect the measuring device as shown in the following figure, and adjust.

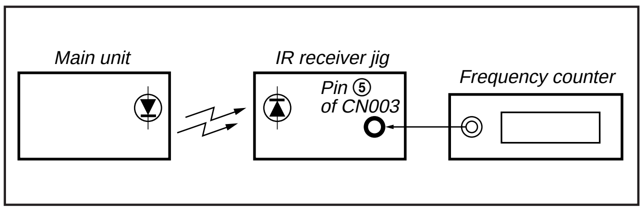


Fig. 5-3-17.

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 37, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 68, change the data, and set the video carrier frequency (f) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

2. IR Video Deviation Adjustment (VC-215 board)

Mode	Camera standby
Subject	Arbitrary
Measurement Point	VIDEO OUT terminal of IR receiver jig (Terminated at 75Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	66
Specified Value	A = 0.87±0.04V

Connection of Equipment
Connect the measuring device as shown in the following figure, and adjust.

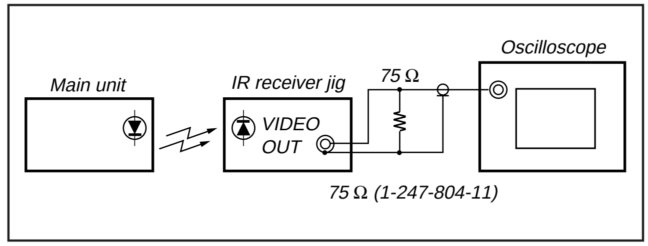


Fig. 5-3-18.

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 39, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 66, and change the data, set the video signal amplitude (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

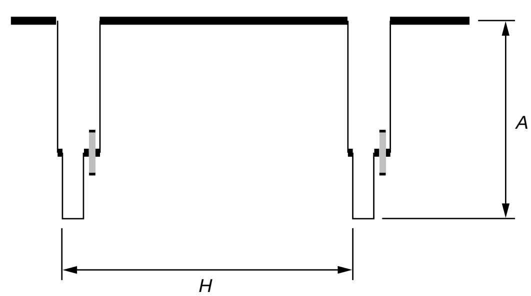


Fig. 5-3-19.

3. IR Audio Deviation Adjustment (VC-215 board)

Mode	VTR recording
Signal	Audio signal : 400Hz, –7.5dBs : AUDIO terminal Video signal : Color bar signal : VIDEO terminal
Measurement Point	AUDIO terminal of IR receiver jig (Terminated at 47kΩ)
Measuring Instrument	Audio level meter
Adjustment Page	F
Adjustment Address	67
Specified Value	Signal level: –7.5±2.0dBs

Connection of Equipment
Connect the measuring device as shown in the following figure, and adjust.

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Connect the audio level meter to the AUDIO terminal of the IR receiver jig.
3) Select page: F, address: 67, change the data and set the 400Hz audio signal level to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 0, address: 01, and set data: 00.

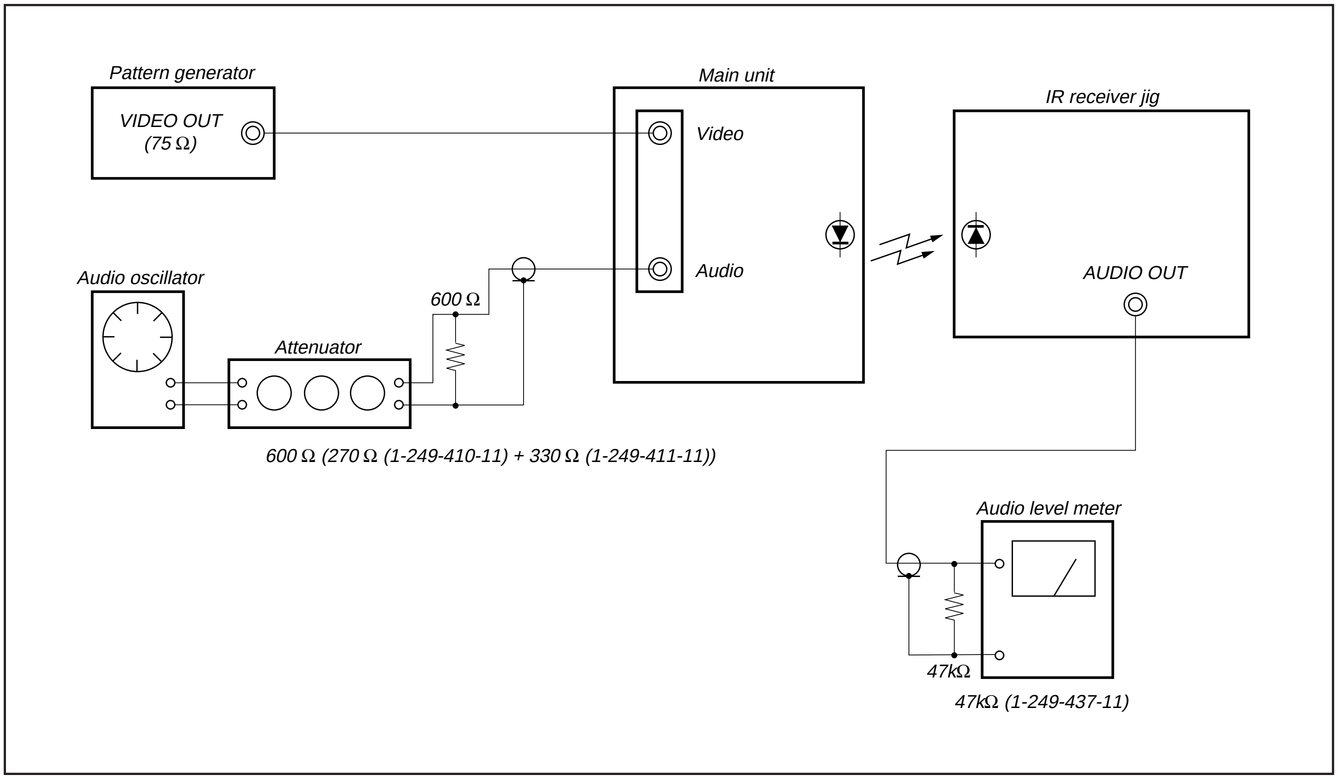


Fig. 5-3-20.

3-6. AUDIO SYSTEM ADJUSTMENT

[Connecting the measuring instruments for the audio]
Connect the audio system measuring instruments besides the video system measuring instruments as shown Fig. 5-3-25.

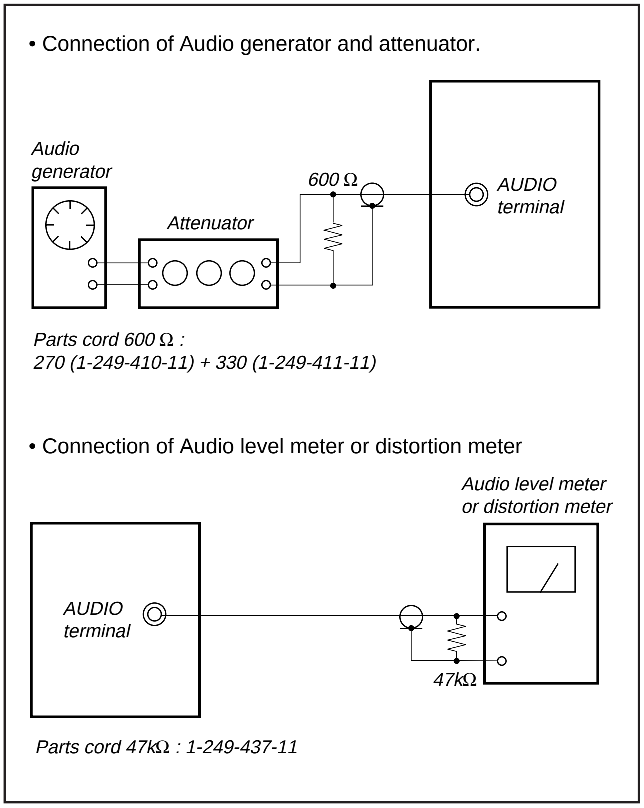


Fig. 5-3-21.

1. 1.5 MHz Deviation Adjustment (VC-215 board)

Adjust to the optimum audio FM signal distortion.
If the adjustment is not correct, its playback level will differ from that of other units.

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5CSP)
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Adjustment Page	F
Adjustment Address	46
Specified Value	–7.5±0.5dBs

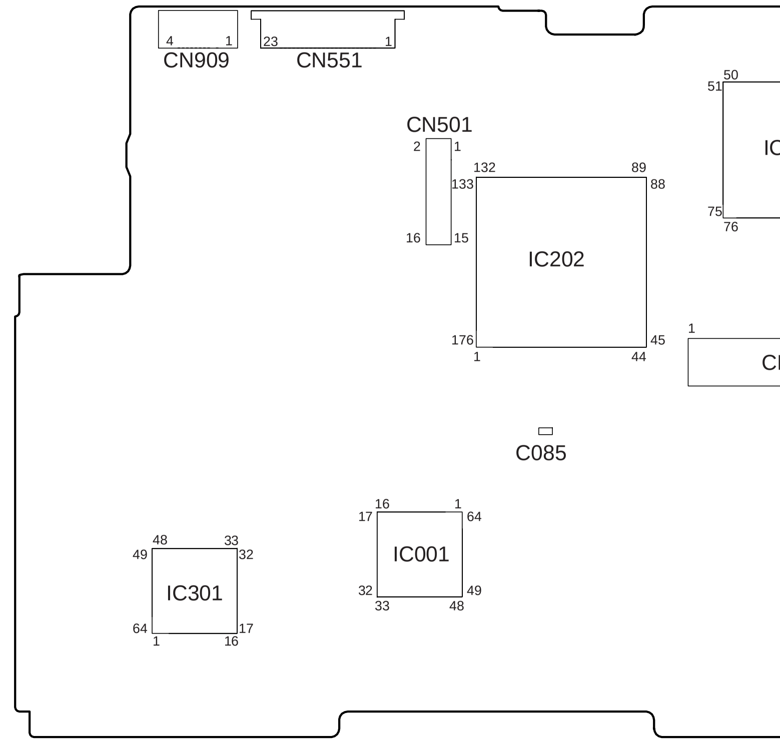
Adjusting method :
1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 46, change the data and set the 400Hz signal level to the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 00.

2. BPF Adjustment (VC-215 board)

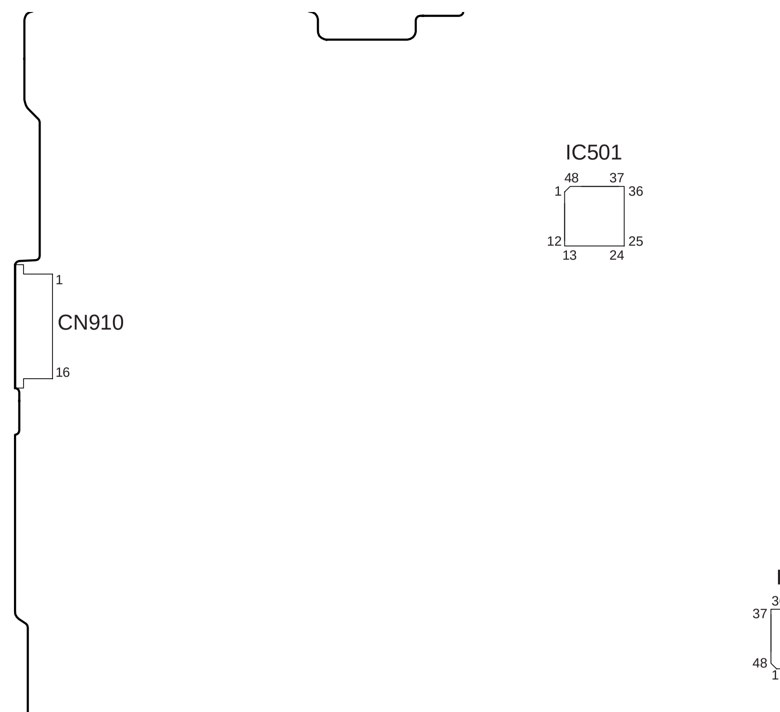
Adjust to the optimum audio BPF characteristics of the IC.
If the adjustment is not correct, the distortion rate and S/N ratio will worsen.

Mode	Playback
Signal	Alignment tape: For BPF adjustment (WR5-11CS)
Measurement Point	Audio output terminal
Measuring Instrument	distortion meter
Adjustment Page	F
Adjustment Address	47
Specified Value	The distortion rate should be and minimum.

Adjusting method :
1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 47, change the data and minimize the distortion rate.
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 00.



VC-215 BOARD (SIDE B)



SECTION 6
REPAIR PARTS LIST

6-1. EXPLODED VIEWS

NOTE:

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

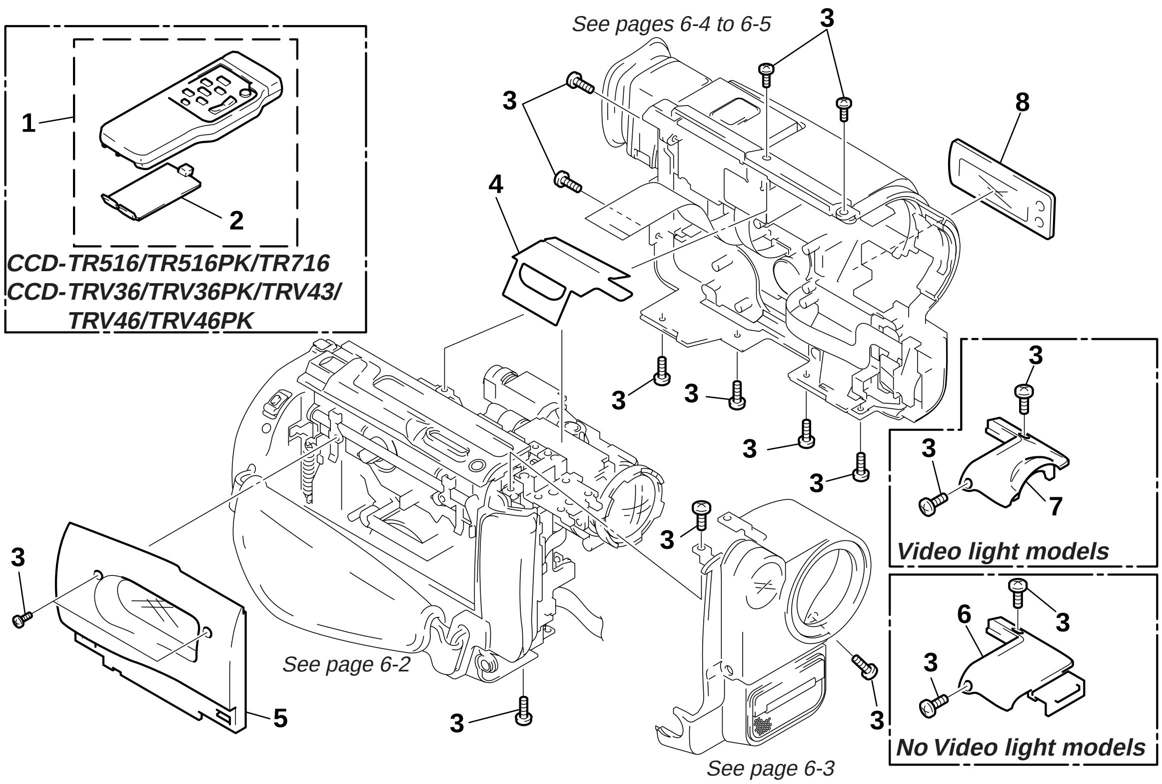
- Abbreviation
  Canadian model is abbreviated as CND.
  Brazilian model is abbreviated as BR.
  Hong Kong model is abbreviated as HK.
  Taiwan model is abbreviated as TW.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

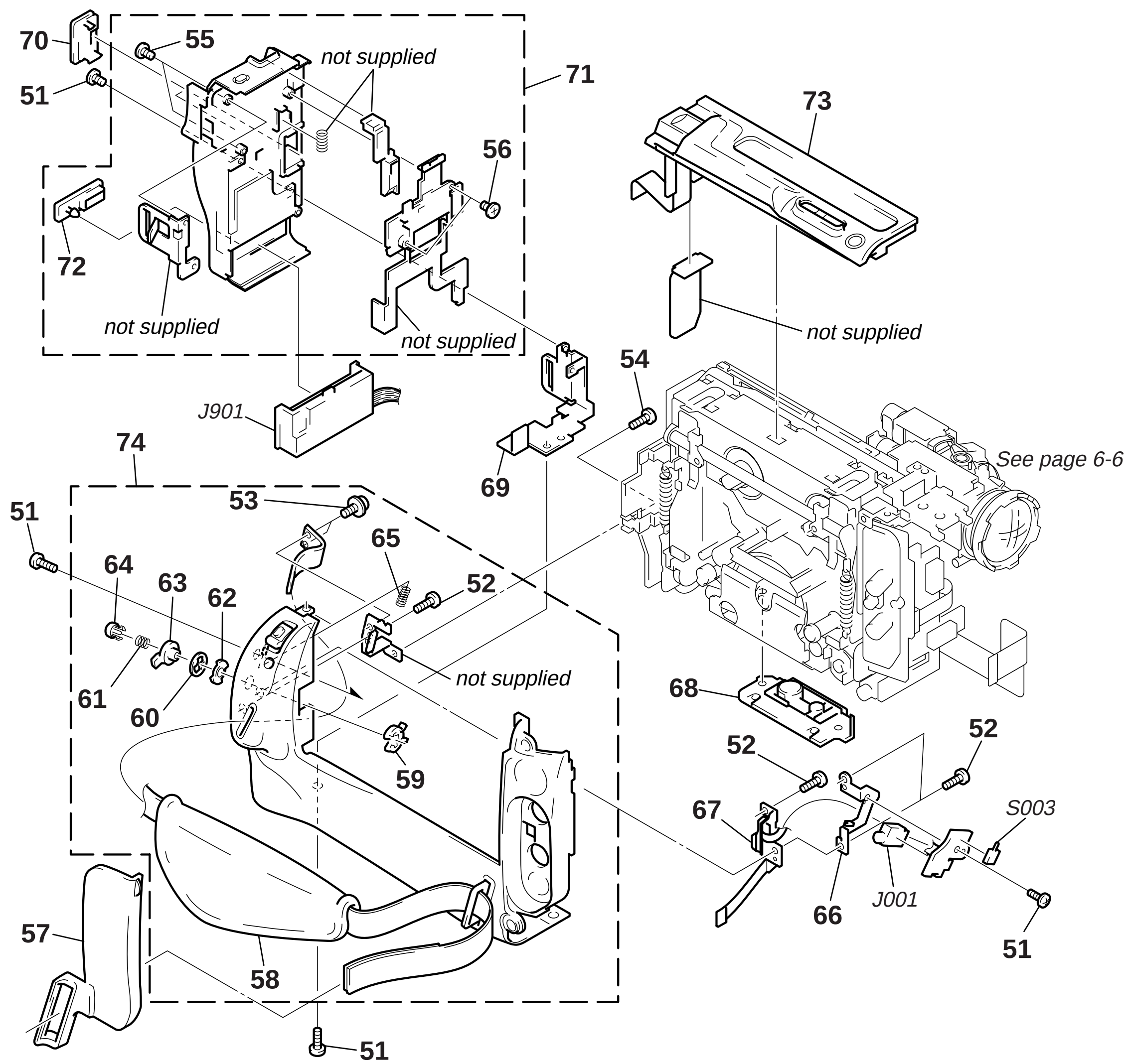
6-1-1. REMOTE COMMANDER AND CASSETTE LID ASSEMBLY

Video light model	*CCD-TR516/TR516PK/TR716 CCD-TRV36/TRV36PK/TRV43/TRV46/TRV46PK*
No video light model	*CCD-TR315/TR416/TR416PK CCD-TRV16/TRV16PK*



Ref. No.	Part No.	Description	Remark
1	1-467-574-21	REMOTE COMMANDER (RMT-708) (TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
2	3-958-131-01	LID, BATTERY CASE (for RMT-708) (TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
3	3-962-826-01	SCREW (2 x 4)	
* 4	3-053-276-01	SHEET (M), LENS INSULATING	
5	X-3948-219-1	LID ASSY, CASSETTE (TR416:US,CND/TR516/TR716/TRV43/TRV46:US,CND)	
5	X-3948-221-1	LID ASSY, CASSETTE (TRV16:US,CND,E,HK/TRV36)	
5	X-3948-222-1	LID ASSY, CASSETTE (TR315:BR/TR516PK/TRV46:E,HK/TRV46PK)	
5	X-3948-223-1	LID ASSY, CASSETTE (TR315:E/TR416:BR/TR416PK/TRV16:BR,TW/TRV36PK)	
6	3-987-645-01	CABINET (N) (for No video light models)	
7	3-987-652-02	CABINET (LT) (for Video light models)	
8	3-053-274-01	WINDOW (900), LCD (TR716)	
8	3-053-274-21	WINDOW (900), LCD (TR516/TR516PK)	
8	3-053-274-91	WINDOW (900), LCD (TR416/TR416PK)	
8	3-053-275-01	WINDOW (910), LCD (TRV46/TRV46PK)	
8	3-053-275-21	WINDOW (910), LCD (TRV36/TRV36PK)	
8	3-053-275-71	WINDOW (910), LCD (TRV43)	
8	3-053-275-81	WINDOW (910), LCD (TRV16:US,CND,E,BR,HK/TRV16PK)	
8	3-054-607-01	WINDOW (900), LCD (TR315)	
8	3-054-642-21	WINDOW (910), LCD (TRV16:TW)	

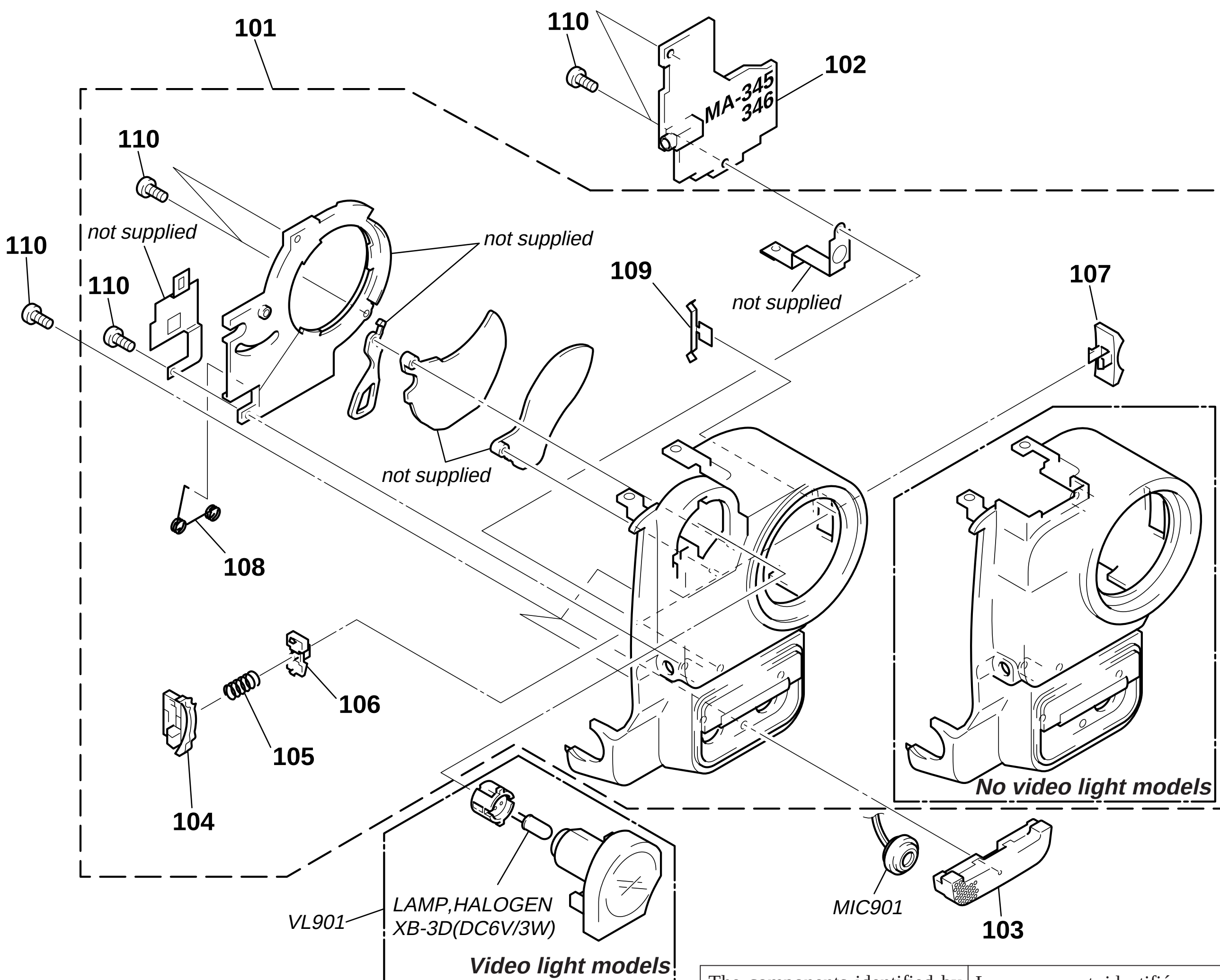
6-1-2. CABINET (L) AND BATTERY PANEL ASSEMBLY



Ref. No.	Part No.	Description	Remark
51	3-962-826-01	SCREW (2 x 4)	
52	3-948-339-61	TAPPING	
53	3-679-362-11	SCREW	
54	3-713-786-21	SCREW (M2 x 3)	
55	3-968-729-61	SCREW (M2 x 3), LOCK ACE, P2	
56	3-713-791-51	SCREW (M1.7 x 3.5), TAPPING, P2	
57	3-975-522-11	COVER, JACK	
58	3-052-815-01	BELT (ES), GRIP	
59	3-949-192-01	HOLDER, STAND-BY KNOB	
60	3-970-854-01	SPRING, STAND-BY	
61	3-979-642-01	SPRING, COMPRESSION	
62	3-975-966-01	SHEET METAL (2), SS	
63	3-969-081-01	KNOB, STAND-BY	
64	3-960-566-01	BUTTON, S/S	
65	3-302-492-00	SPRING, COMPRESSION	
* 66	3-975-532-01	HOLDER, EL	
67	1-475-619-11	SWITCH BLOCK, CONTROL (SS-8500)	
68	3-987-717-01	SCREW, TRIPOD	
69	3-987-679-01	SHEET METAL (LOWER), STRAP	
70	3-975-752-01	LID (BT), CPC	
71	X-3948-171-1	PANEL ASSY, BATTERY (Except TR315:BR/TR416:BR/TRV16:BR)	
71	X-3948-461-1	PANEL ASSY, BATTERY (TR315:BR/TR416:BR/TRV16:BR)	
72	3-987-656-01	LID, JACK	
73	1-475-617-11	SWITCH BLOCK, CONTROL (FK-8500) (TR series/TRV16/TRV16PK/TRV36/TRV36PK)	
73	1-475-617-21	SWITCH BLOCK, CONTROL (FK-8500) (TRV43/TRV46/TRV46PK)	
74	X-3948-207-1	CABINET (L) ASSY (for TRV series)	
74	X-3948-208-1	CABINET (L) ASSY (for TR series)	
J001	1-565-276-31	JACK, ULTRA SMALL 1P (LANC)	
J901	1-694-384-11	TERMINAL BOARD, BATTERY	
S003	1-572-688-11	SWITCH, PUSH (1 KEY) (EJECT)	

6-1-3. FRONT PANEL BLOCK ASSEMBLY

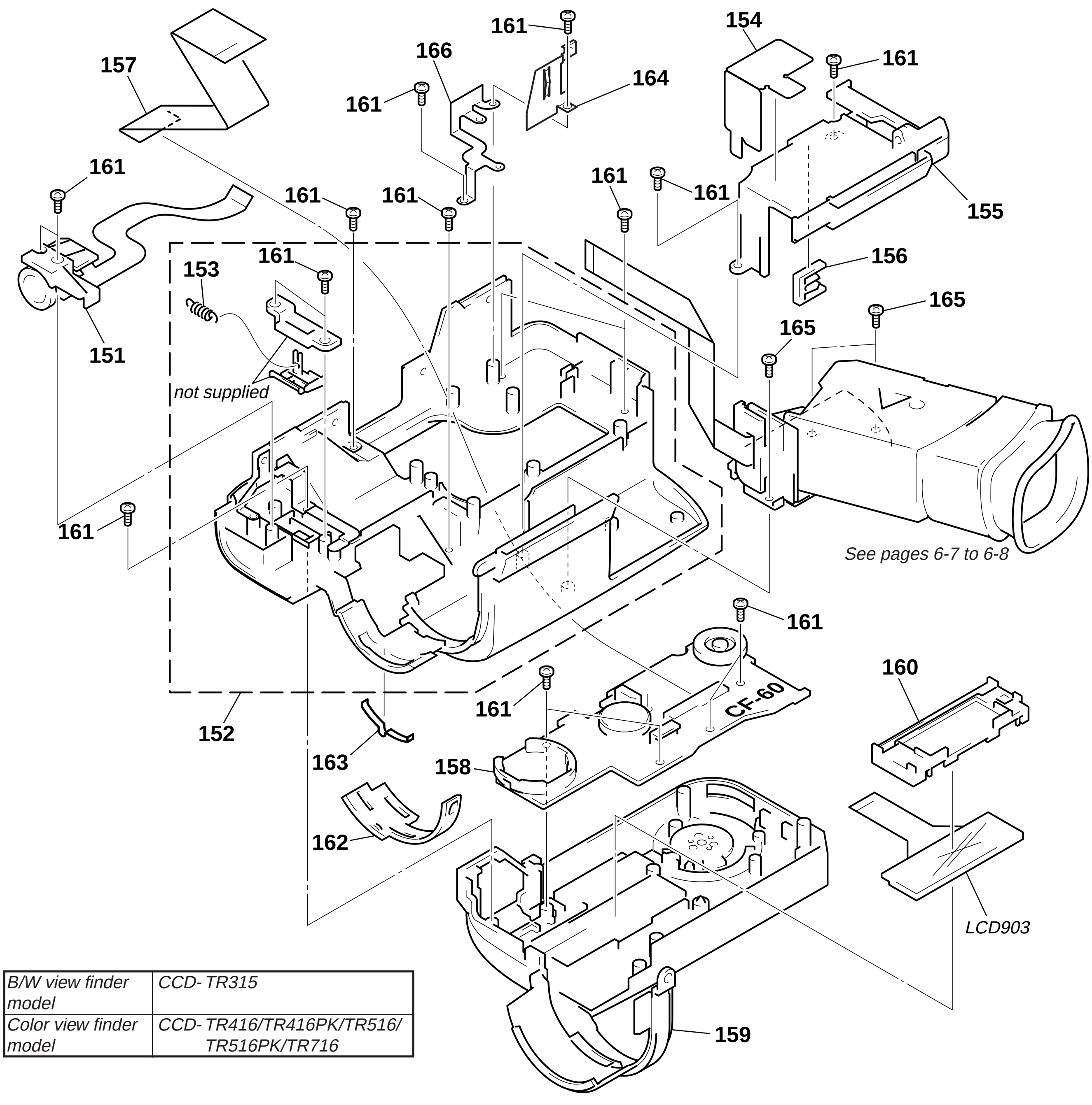
Video light model	*CCD-TR516/TR516PK/TR716* *CCD-TRV36/TRV36PK/TRV43/TRV46/TRV46PK*
No video light model	*CCD-TR315/TR416/TR416PK* *CCD-TRV16/TRV16PK*



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
101	X-3949-168-1	PANEL ASSY, FRONT (TR516/TR516PK/TR716)	
101	X-3949-453-1	PANEL ASSY (V), FRONT (TRV43/TRV46/TRV46PK)	
101	X-3949-454-1	PANEL ASSY (V), FRONT (TRV36/TRV36PK)	
101	X-3949-503-1	PANEL ASSY, FRONT (TR315/TR416/TR416PK)	
101	X-3949-514-1	PANEL ASSY (V), FRONT (TRV16:US,CND,E,BR,HK/TRV16PK)	
101	X-3949-527-1	PANEL ASSY (V), FRONT (TRV16:TW)	
102	A-7073-782-A	MA-345 (B) BOARD, COMPLETE (TR516/TR516PK/TR716)	
102	A-7073-812-A	MA-346 (VIB) BOARD, COMPLETE (TRV43/TRV46/TRV46PK)	
102	A-7073-820-A	MA-345 (SL) BOARD, COMPLETE (TR315/TR416/TR416PK)	
102	A-7073-823-A	MA-346 (VZB) BOARD, COMPLETE (TRV36/TRV36PK)	
102	A-7073-873-A	MA-346 (VZL) BOARD, COMPLETE (TRV16/TRV16PK)	
* 103	X-3948-493-1	GRILLE ASSY (G), MICROPHONE	
104	3-987-632-01	HOLDER, P KNOB	
105	3-973-619-01	SPRING, COMPRESSION	
106	3-987-633-01	BUTTON, LOCK	
107	3-987-631-01	KNOB, P	
108	3-987-882-01	SPRING, TORSION	
109	3-987-642-01	SPRING, CLICK	
110	3-948-339-61	TAPPING	
MIC901	1-542-312-11	MICROPHONE	
⚠VL901	1-517-760-11	LIGHT, VIDEO (for Video light models)	

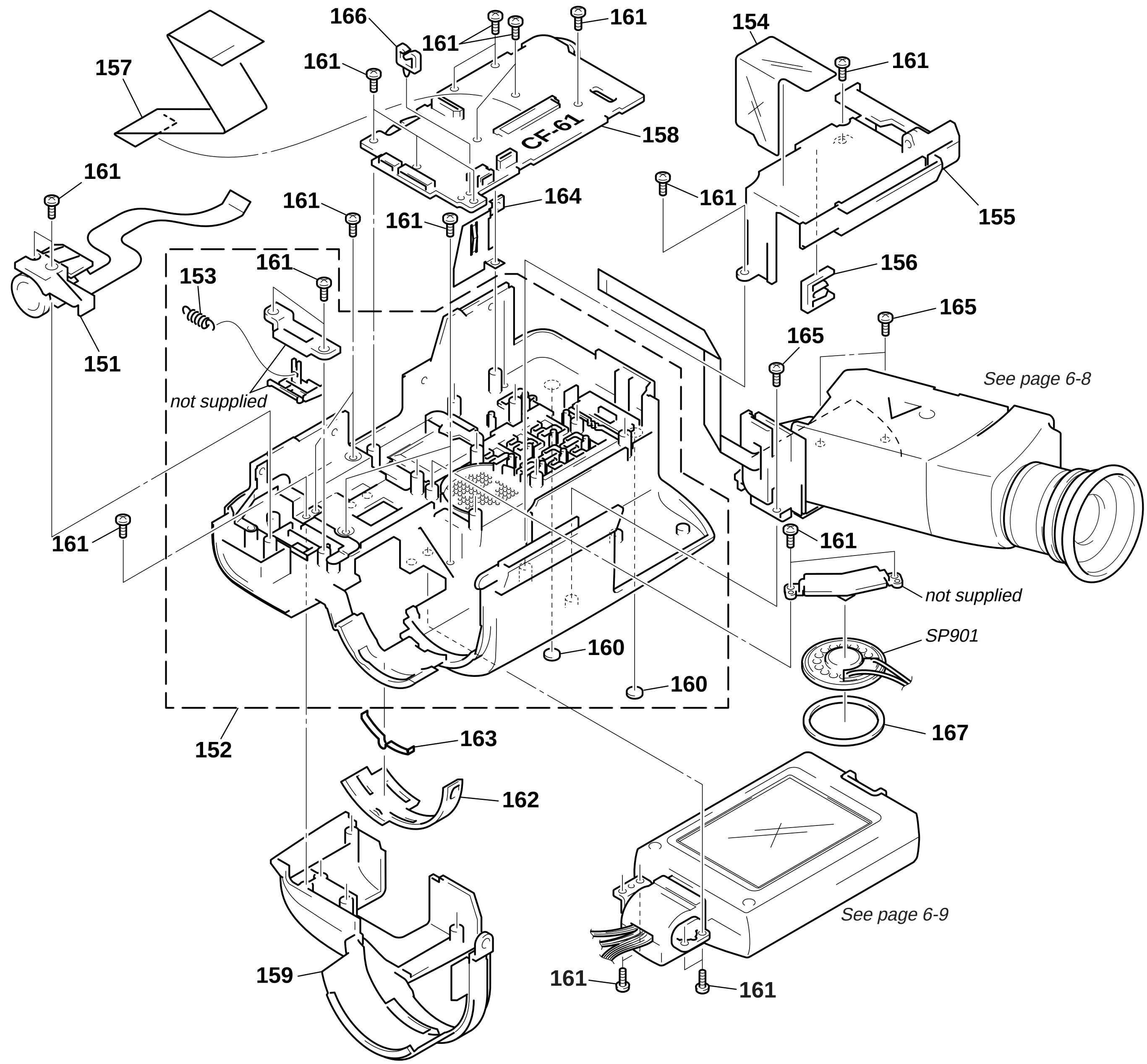
6-1-4. CABINET (R) BLOCK ASSEMBLY (TR series)



B/W view finder model	CCD- TR315
Color view finder model	CCD- TR416/TR416PK/TR516/ TR516PK/TR716

Ref. No.	Part No.	Description	Remark
151	1-475-620-11	SWITCH BLOCK, CONTROL (MF-8500)	
152	X-3949-179-1	CABINET (R) ASSY (TR516/TR516PK/TR716)	
152	X-3949-501-1	CABINET (R) ASSY (TR315/TR416:US,CND)	
152	X-3949-518-1	CABINET (R) ASSY (TR416:BR/TR416PK)	
153	3-989-121-01	SPRING, TENSION	
* 154	3-987-842-01	SHEET, VF FLEXIBLE RETAINER (for B/W View finder models)	
155	X-3948-603-1	BASE ASSY, VF	
156	3-987-783-01	LOCK, TILT	
157	1-790-334-11	CABLE, FLEXIBLE FLAT (FFC-257F)	
158	A-7073-783-A	CF-60 (CN) BOARD, COMPLETE (TR416/TR416PK/TR516/TR516PK/TR716)	
158	A-7073-821-A	CF-60 (N) BOARD, COMPLETE (TR315)	
159	X-3949-172-1	COVER ASSY, TR (TR516/TR516PK/TR716)	
159	X-3949-500-1	COVER ASSY, TR (TR315/TR416/TR416PK)	
160	3-053-195-01	HOLDER, LCD	
161	3-948-339-61	TAPPING	
162	3-987-744-01	KNOB, IR	
163	3-987-739-01	SPRING, LINK PLATE	
164	9-987-742-01	PLATE (878), GROUND	
165	3-948-339-01	SCREW, TAPPING	
* 166	3-053-202-01	SHEET METAL, ELECTROSTATIC	
LCD903	A-7093-473-A	INDICATION LCD BLOCK ASSY	

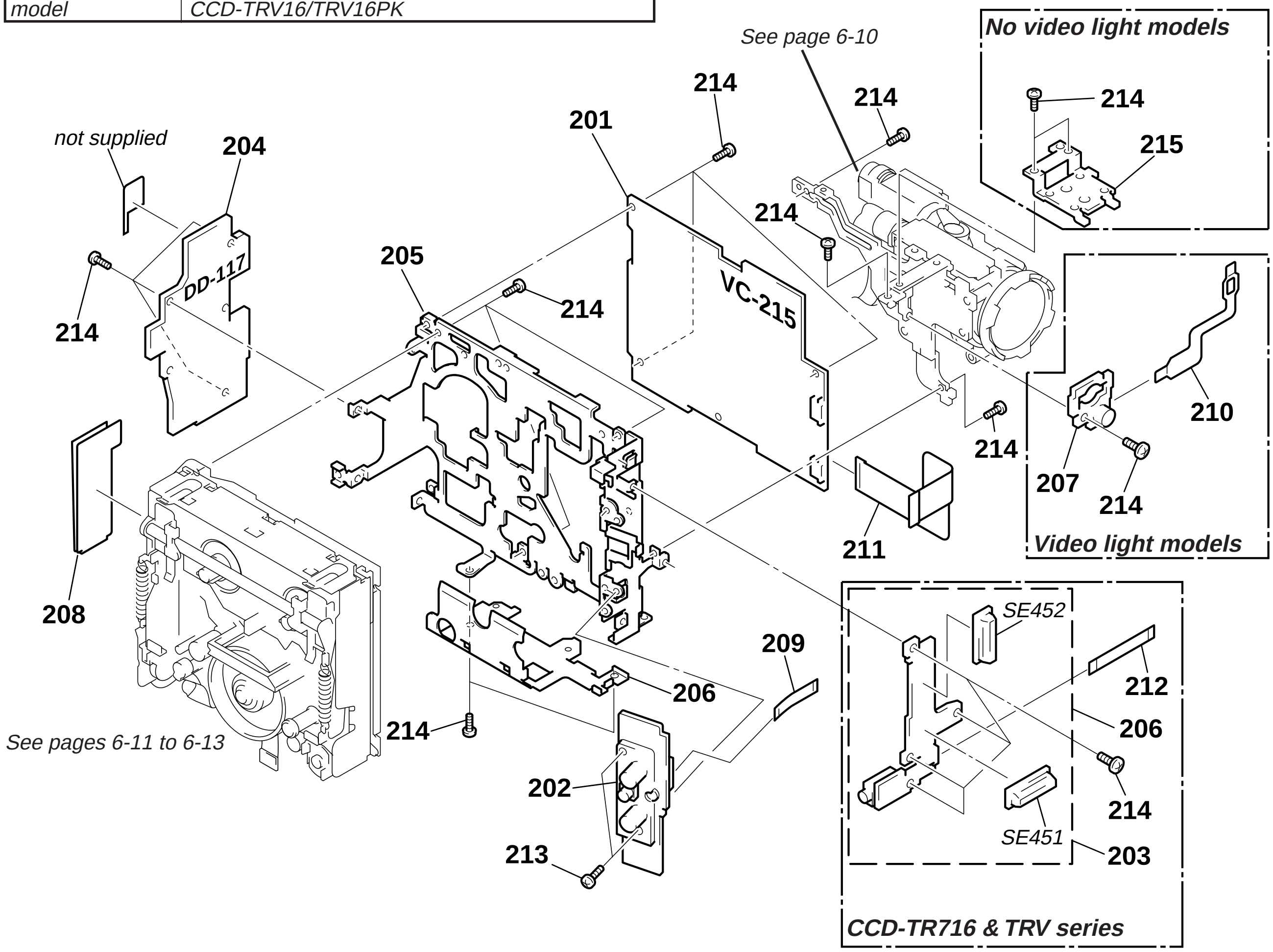
6-1-5. CABINET (R) BLOCK ASSEMBLY (TRV series)



Ref. No.	Part No.	Description	Remark
151	1-475-620-11	SWITCH BLOCK, CONTROL (MF-8500)	
152	X-3949-280-1	CABINET (R) ASSY (TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
152	X-3949-522-1	CABINET (R) ASSY (TRV16:US,CND,E,BR,HK/TRV16PK)	
152	X-3949-528-1	CABINET (R) ASSY (TRV16:TW)	
153	3-989-121-01	SPRING, TENSION	
* 154	3-987-842-01	SHEET, VF FLEXIBLE RETAINER	
155	X-3948-603-1	BASE ASSY, VF	
156	3-987-783-01	LOCK, TILT	
157	1-790-334-11	CABLE, FLEXIBLE FLAT (FFC-257F)	
158	A-7073-811-A	CF-61 BOARD, COMPLETE	
159	X-3949-173-1	COVER ASSY, IR (TRV43/TRV46/TRV46PK)	
159	X-3949-321-1	COVER ASSY, IR (TRV36/TRV36PK)	
159	X-3949-404-1	COVER ASSY, IR (TRV16:TW)	
159	X-3949-530-1	COVER ASSY, IR (TRV16:US,CND,E,BR,HK/TRV16PK)	
160	3-959-978-02	CUSHION, PANEL	
161	3-948-339-61	TAPPING	
162	3-987-744-01	KNOB, IR	
163	3-987-739-01	SPRING, LINK PLATE	
164	9-987-742-01	PLATE (878), GROUND	
165	3-948-339-01	SCREW, TAPPING	
* 166	3-053-798-01	CLAMP, HARNESS	
167	3-965-367-01	SPACER, SP	
SP901	1-504-753-41	SPEAKER (2.8 CM)	

6-1-6. MAIN BOARDS BLOCK ASSEMBLY

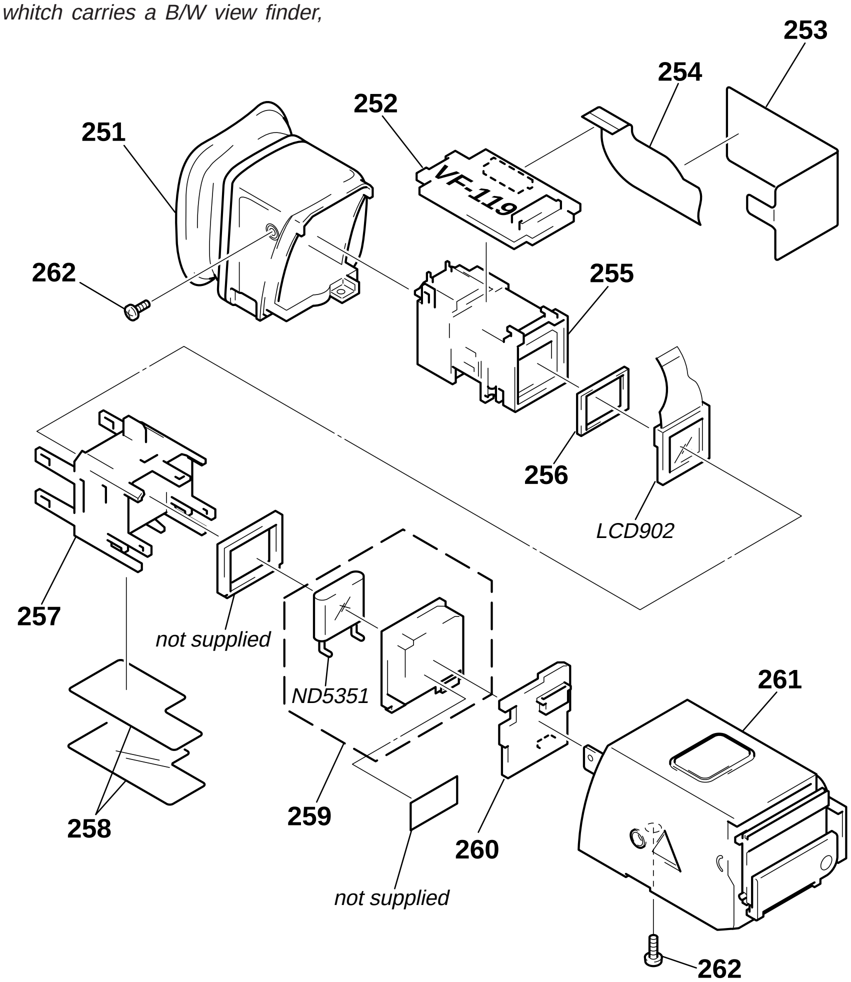
Video light model	CCD-TR516/TR516PK/TR716 CCD-TRV36/TRV36PK/TRV43/TRV46/TRV46PK
No video light model	CCD-TR315/TR416/TR416PK CCD-TRV16/TRV16PK



Ref. No.	Part No.	Description	Remark
201	A-7094-110-A	VC-215 (ZCB0) BOARD, COMPLETE	(TR516/TR516PK)
201	A-7094-111-A	VC-215 (MMCB0) BOARD, COMPLETE (TR716)	
201	A-7094-112-A	VC-215 (ZSL0) BOARD, COMPLETE (TR315)	
201	A-7094-117-A	VC-215 (VZB0) BOARD, COMPLETE	(TRV36/TRV36PK)
201	A-7094-118-A	VC-215 (VMMIB0) BOARD, COMPLETE	(TRV43/TRV46/TRV46PK)
201	A-7094-179-A	VC-215 (ZLC0) BOARD, COMPLETE	(TR416/TR416PK)
201	A-7094-204-A	VC-215 (VZL0) BOARD, COMPLETE	(TRV16/TRV16PK)
202	A-7073-788-A	PJ-90 BOARD, COMPLETE (for TR series)	
202	A-7073-809-A	PJ-91 (V) BOARD, COMPLETE (for TRV series)	
203	A-7073-789-A	SE-80 (MM) BOARD, COMPLETE (TR716)	
203	A-7073-810-A	SE-81 (VMM) BOARD, COMPLETE	(TRV43/TRV46/TRV46PK)
203	A-7073-825-A	SE-81 (V) BOARD, COMPLETE	(TRV16/TRV16PK/TRV36/TRV36PK)
204	A-7073-785-A	DD-117 (MMCB0) BOARD, COMPLETE	(TR516/TR516PK/TR716)
204	A-7073-806-A	DD-117 (VMMIB0) BOARD, COMPLETE	(TRV43/TRV46/TRV46PK)
204	A-7073-818-A	DD-117 (ZL0) BOARD, COMPLETE (TR315)	
204	A-7073-824-A	DD-117 (VZB0) BOARD, COMPLETE	(TRV36/TRV36PK)
204	A-7073-858-A	DD-117 (ZLC0) BOARD, COMPLETE	(TR416/TR416PK)
204	A-7073-874-A	DD-117 (VZL0) BOARD, COMPLETE	(TRV16/TRV16PK)
205	3-987-711-11	FRAME (A), MD	
206	3-987-675-01	FRAME (B), MD	
207	A-7073-787-A	VL-21 BOARD, COMPLETE	(TR516/TR516PK/TR716)
207	A-7073-808-A	VL-22 BOARD, COMPLETE	(TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
* 208	3-987-716-01	PROTECTOR, LS FLEXIBLE	
209	1-668-957-11	FP-621 FLEXIBLE BOARD	
210	1-672-454-11	FP-58 FLEXIBLE BOARD (for Video light models)	
211	1-672-453-11	FP-56 FLEXIBLE BOARD	
212	1-668-956-11	FP-620 FLEXIBLE BOARD (TR716/TRV series)	
213	3-962-826-01	SCREW (2 x 4)	
214	3-713-786-21	SCREW (M2 x 3)	
215	3-987-719-01	BRACKET, SHOE (for No video light models)	
SE451	1-803-041-11	SENSOR, ANGULAR VELOCITY (YAW)	(TR716/TRV43/TRV46/TRV46PK)
SE452	1-803-041-21	SENSOR, ANGULAR VELOCITY (PITCH)	(TR716/TRV43/TRV46/TRV46PK)

6-1-7. COLOR EVF BLOCK ASSEMBLY
(Color View Finder models CCD-TR416/TR416PK/TR516/TR516PK/TR716)

Note : As for the model whitch carries a B/W view finder, refer to page 6-8.

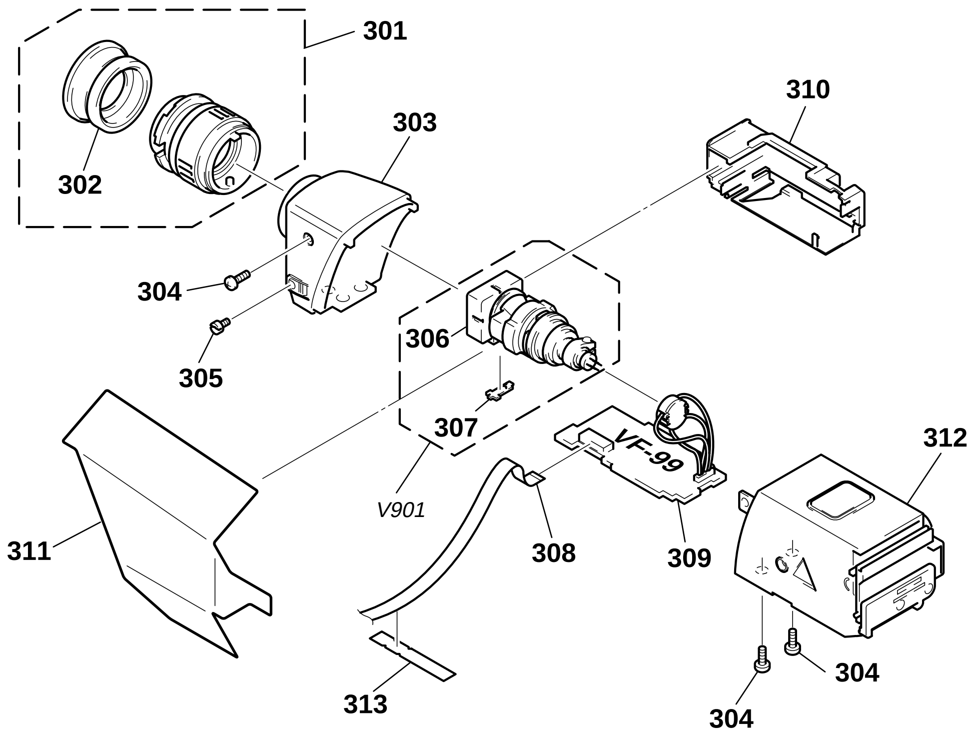


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
251	X-3948-237-1	CABINET (REAR) (SC) (N) ASSY, EVF	
252	A-7073-437-A	VF-119 BOARD, COMPLETE	
253	3-053-224-01	SHEET ,FLEXIBLE RETAINER	
254	1-672-455-11	FP-57 FLEXIBLE BOARD	
255	X-3948-229-1	LENS ASSY (860), VF	
* 256	3-960-302-11	CUSHION (1), LCD	
257	X-3949-174-1	HOLDER ASSY, BL	
258	3-050-905-01	SHEET, VF LIGHT INTERCEPTION	
259	A-7073-439-A	LB-54 BOARD, COMPLETE	
260	A-7073-438-A	VF-120 BOARD, COMPLETE	
261	X-3949-175-1	CABINET (FRONT) ASSY, EVF (TR516/TR516PK/TR716)	
261	X-3949-502-1	CABINET (FRONT) ASSY, EVF (TR416/TR416PK)	
262	3-968-729-61	SCREW (M2 x 3), LOCK ACE, P2	
LCD902	8-753-023-37	LCX024AK-4/5 COMPLE	
⚠ND5351	1-517-315-21	LAMP, FLUORESCENT (0.55 INCH)	

6-1-8. B/W EVF BLOCK ASSEMBLY
(B/W View Finder models CCD-TR315 and TRV series)

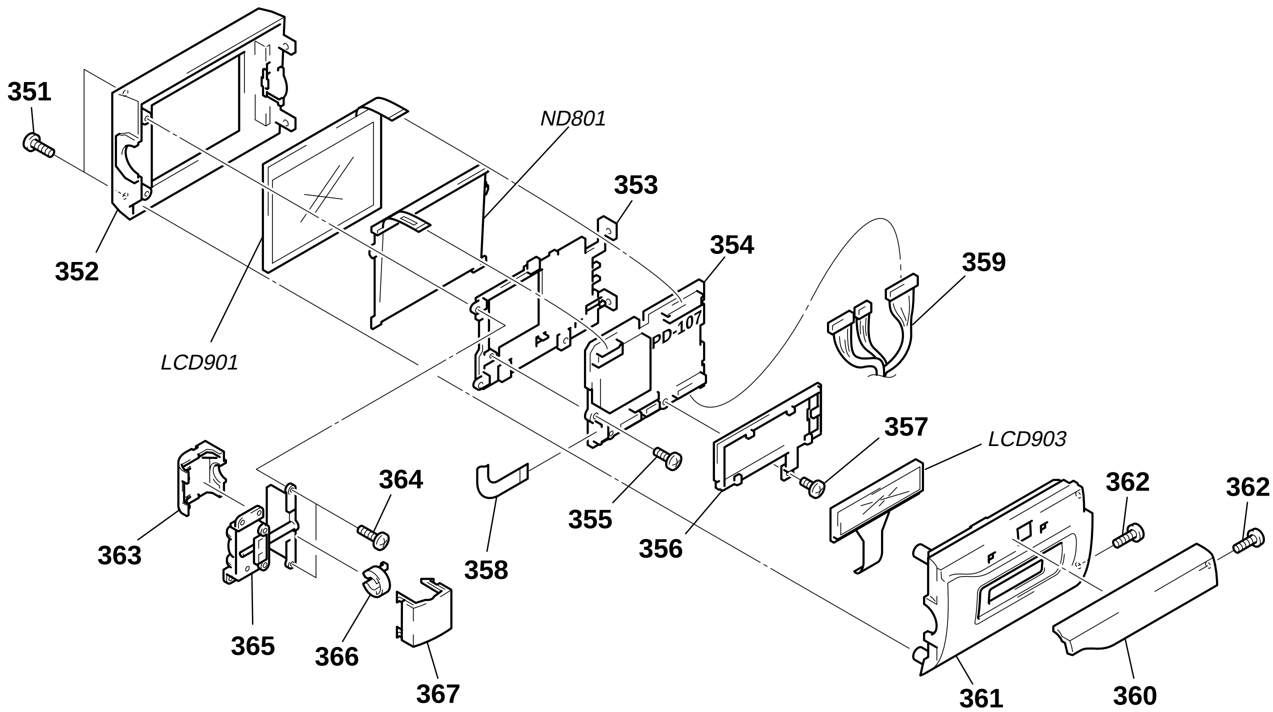
Note : As for the model whitch carries a color view finder, refer to page 6-7.



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
301	X-3949-273-1	FINDER ASSY	
302	3-963-391-01	EYE CUP	
303	X-3948-278-1	CABINET (REAR) (878) B ASSY	
304	3-968-729-61	SCREW (M2 x 3), LOCK ACE, P2	
305	3-975-898-01	SCREW (T), F LOCK	
306	3-977-292-01	MASK, CRT	
307	3-725-130-01	COVER, HINGE VOLTAGE	
308	1-783-241-11	CABLE, FLEXIBLE FLAT (FFC-235)	
309	A-7066-792-A	VF-99 (VHL4) BOARD, COMPLETE	
310	X-3948-279-1	HOLDER (878) ASSY, CRT	
* 311	3-989-914-01	SHEET, VF (B/W) ELECTROSTATIC	
312	X-3948-364-1	CABINET (FRONT) (845) B ASSY (TR315/TRV16:US,CND,E,BR,HK/TRV16PK)	
312	X-3949-176-1	CABINET (FRONT) ASSY, EVF (TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
312	X-3949-403-1	CABINET (FRONT) ASSY, EVF (TRV16:TW)	
* 313	3-987-843-01	SHEET, VF FLEXIBLE LOCK	
⚠ V901	1-452-673-61	CRT ASSY (M01KXX90WB)	

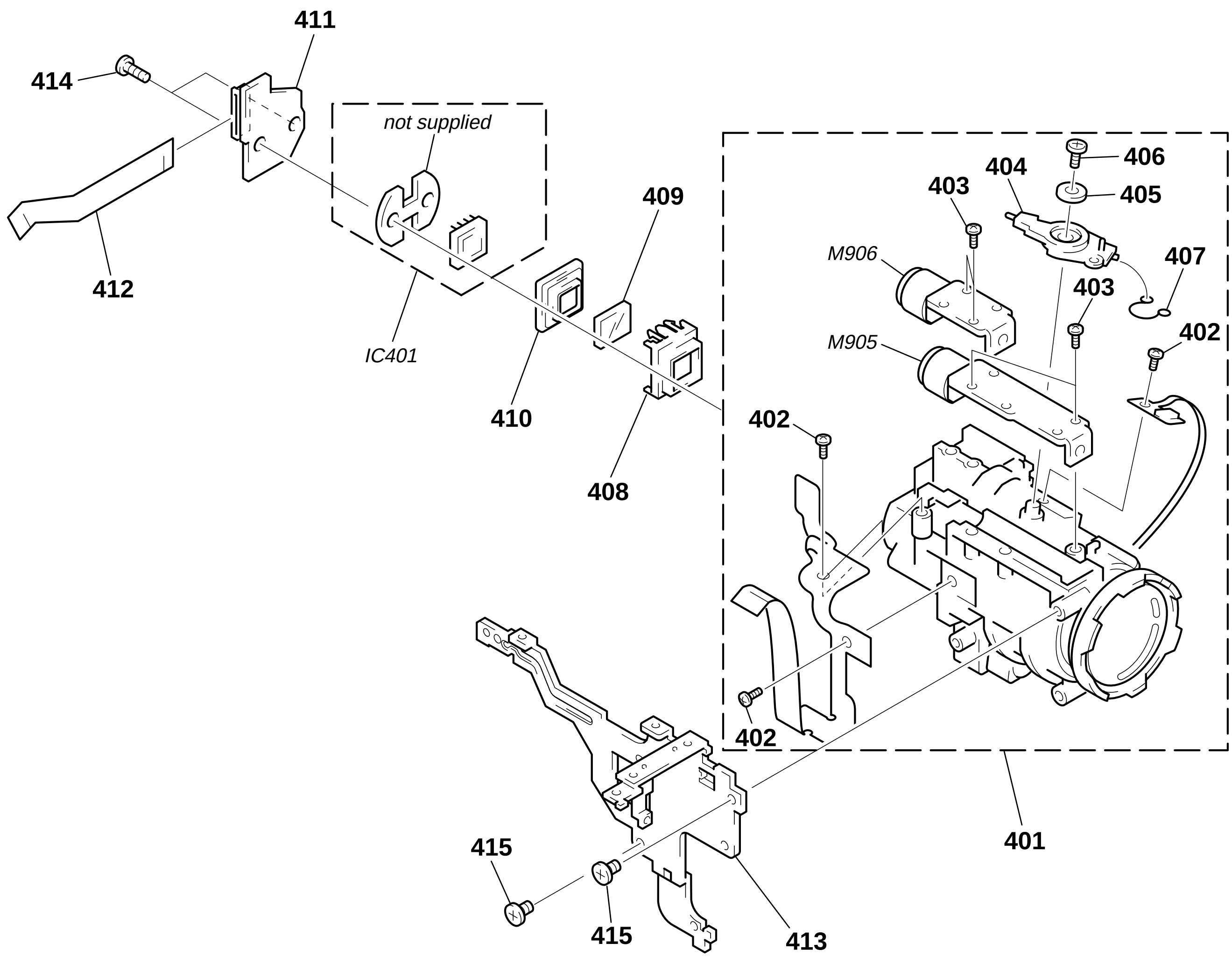
6-1-9. LCD BLOCK ASSEMBLY (TRV series)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
351	3-948-339-11	SCREW, TAPPING	
352	X-3948-162-1	CABINET (M) (870) ASSY, P	
353	3-053-206-01	FRAME (S), PANEL	
354	A-7073-813-A	PD-107 (S6N) BOARD, COMPLETE	
355	3-713-786-21	SCREW (M2 x 3)	
356	3-987-584-11	HOLDER (870), LCD	
357	4-981-286-01	SCREW (M1.7 x 2) (IB LOCK)	
358	1-668-963-21	FP-642 FLEXIBLE BOARD	
359	1-959-271-11	HARNESS (PD-108)	
360	3-053-205-01	CABINET (U), P (TRV16/TRV16PK)	
360	3-053-205-11	CABINET (U), P (TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
361	3-053-203-01	CABINET (C), P (Except TRV16:TW)	
361	3-053-203-11	CABINET (C), P (TRV16:TW)	
362	3-962-826-01	SCREW (2 x 4)	
363	3-987-625-01	COVER (M), HINGE	
364	3-948-339-01	SCREW, TAPPING	
365	X-3948-169-7	HINGE ASSY	
366	3-987-623-01	CLAMP, HARNESS	
367	3-503-204-01	COVER (C), HINGE (Except TRV16:TW)	
367	3-503-204-11	COVER (C), HINGE (TRV16:TW)	
LCD903	A-7093-473-A	INDICATION LCD BLOCK ASSY	
LCD901	1-803-355-21	MODULE, CRYSTAL INDICATION	
⚠ND801	1-517-752-11	TUBE, FLUORESCENT, COLD CATHODE	

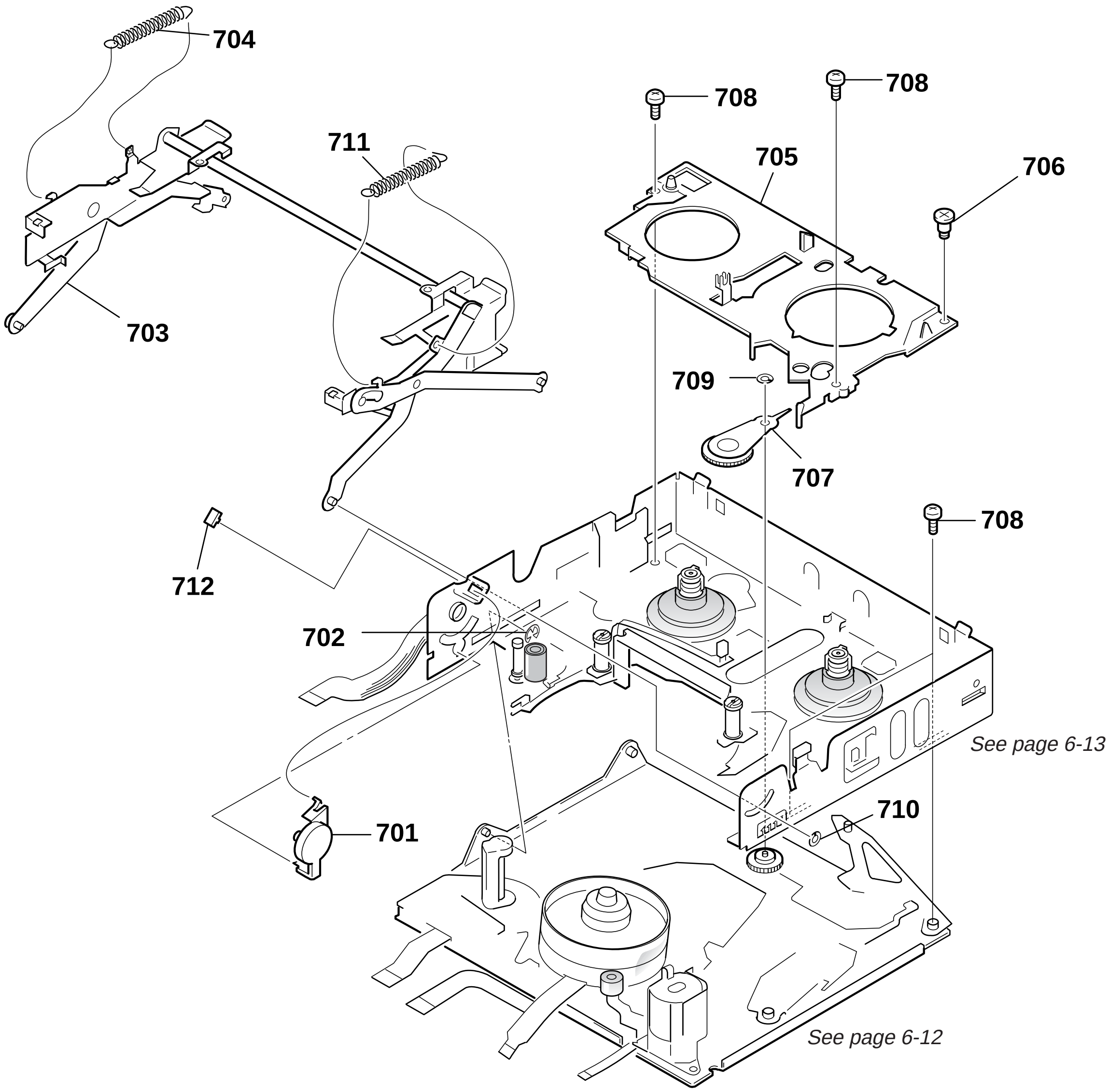
6-1-10. ZOOM LENS BLOCK ASSEMBLY



Be sure to read "Note on the CCD Imager replacement" on page 4–8 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
401	8-848-722-01	DEVICE, LENS (LSV-600A)	
402	3-713-791-51	SCREW (M1.7 x 3.5), TAPPING, P2	
403	3-713-791-41	SCREW (M1.7 x 5), TAPPING PS	
404	3-979-029-01	LEVER, IR	
405	2-327-405-01	WASHER	
406	2-623-756-21	SCREW (B1.7 x 5), P	
407	3-979-037-11	SPRING, RETURN	
408	3-978-981-11	ADAPTOR (FK), CCD FITTING	
409	1-758-133-21	FILTER BLOCK, OPTICAL	
410	3-953-817-01	RUBBER (F), SEAL	
411	A-7073-786-A	CD-210 (NT) BOARD, COMPLETE (for TR series)	
411	A-7073-807-A	CD-211 (NT) BOARD, COMPLETE (for TRV series)	
412	1-668-959-11	FP-623 FLEXIBLE BOARD	
413	3-987-712-01	FRAME, LENS	
414	3-318-203-11	SCREW (B1.7 x 6), TAPPING	
415	3-948-339-61	TAPPING	
IC401	A-7030-960-A	CCD BLOCK ASSY (206 Service) (TR315/TR416/TR416PK/TR516/TR516PK/ TRV16/TRV16PK/TRV36/TRV36PK)	
IC401	A-7030-961-A	CCD BLOCK ASSY (207 Service) (TR716/TRV43/TRV46/TRV46PK)	
M905	1-763-047-11	MOTOR, FOCUS STEPPING	
M906	1-763-046-11	MOTOR, ZOOM STEPPING	

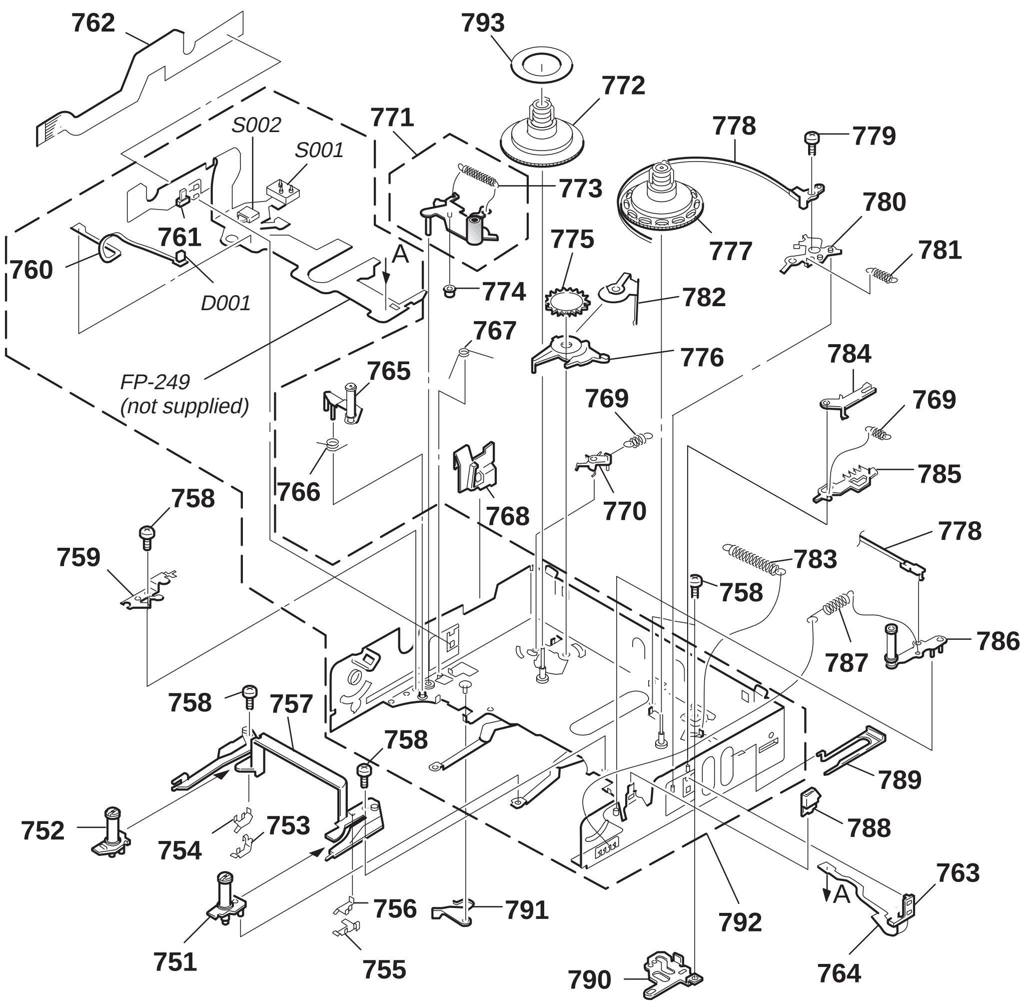
6-1-11. CASSETTE COMPARTMENT ASSEMBLY



Ref. No.	Part No.	Description	Remark
701	A-7040-421-A	DAMPER ASSY	
702	7-624-102-04	STOP RING 1.5, TYPE -E	
703	X-3949-153-2	CASSETTE COMPARTMENT ASSY	
704	3-965-587-03	SPRING (POWER, TENSION), TENSION	
705	3-965-584-08	RETAINER, GOOSENECK	
706	3-976-055-01	SCREW (M1.4X1)	

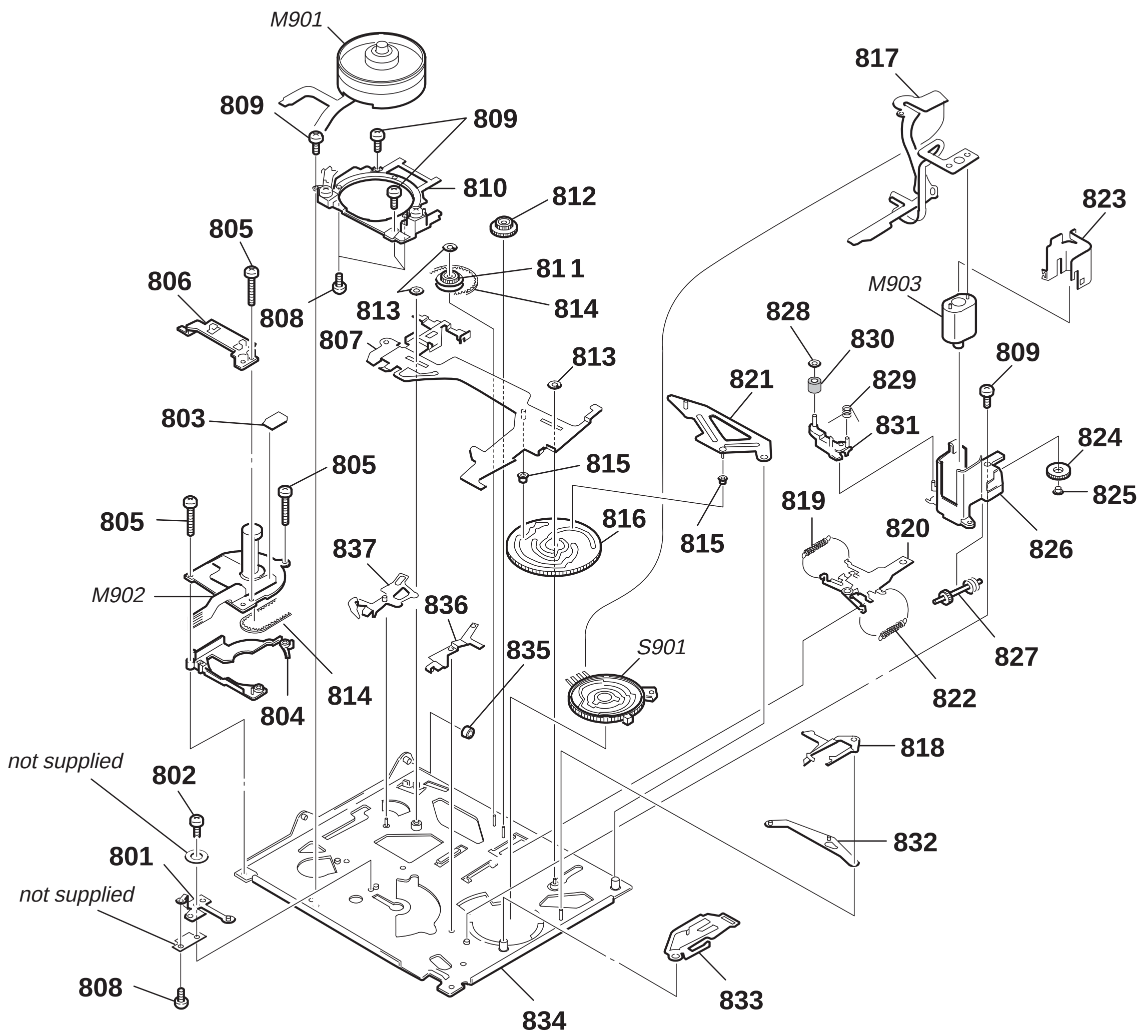
Ref. No.	Part No.	Description	Remark
707	X-3945-399-1	GEAR ASSY, GOOSENECK	
708	3-947-503-01	SCREW (M1.4X2.5)	
709	3-331-007-21	WASHER	
710	3-727-176-01	WASHER, STOPPER	
711	3-973-268-01	SPRING (POWER, TENSION), TENSION	
712	3-971-076-01	FASTENER, D	

6-1-12. LS CHASSIS ASSEMBLY



Ref. No.	Part No.	Description	Remark
751	A-7040-419-A	BASE (S) BLOCK ASSY, GUIDE	
752	A-7040-418-B	BASE (T) BLOCK ASSY, GUIDE	
753	3-965-559-01	STOPPER (T)	
754	3-965-557-01	STOPPER (T), GB	
755	3-965-558-01	STOPPER (S)	
756	3-965-556-01	STOPPER (S), GB	
757	3-965-553-01	RAIL, GUIDE	
758	3-947-503-01	SCREW (M1.4X2.5)	
759	3-965-573-01	RETAINER, TG4	
760	1-658-213-11	FP-355 FLEXIBLE BOARD	
761	3-965-552-01	HOLDER (T), SENSOR	
762	1-657-786-13	FP-221 FLEXIBLE BOARD	
763	3-965-551-01	HOLDER (S), SENSOR	
764	1-658-214-11	FP-356 FLEXIBLE BOARD	
765	A-7040-417-A	ARM BLOCK ASSY, TG4	
766	3-965-574-01	SPRING (RETURN, TG4), TORSION	
767	3-965-575-01	SPRING (PINCH), TORSION	
768	3-965-568-01	GUIDE, LOCK	
769	3-965-562-01	SPRING (RATCHET), TENSION	
770	3-965-581-03	RATCHET, T	
771	X-3949-380-1	ARM ASSY (E), PINCH	
772	X-3945-398-2	DECK ASSY, REEL, T	
773	3-965-648-01	SPRING (PINCH), TENSION	
774	3-965-579-01	ROLLER, PINCH PRESS	
775	3-965-563-01	GEAR, T SOFT	
776	3-965-565-01	CLAW, T SOFT	
777	X-3945-397-1	DECK ASSY, REEL, S	
778	X-3945-396-1	BAND ASSY, TENSION REGULATOR	
779	3-945-756-01	SCREW (M1.4X3)	
780	3-965-583-01	ARM, RVS	
781	3-965-580-01	SPRING (ARM, RVS), TENSION	
782	3-966-384-01	SPRING, T SOFT	
783	3-965-578-01	SPRING, TENSION COIL	
784	3-965-560-01	RATCHET, S	
785	3-965-561-01	PLATE, RELEASE, S RATCHET	
786	X-3945-395-1	ARM ASSY, TG1	
787	3-965-576-01	SPRING (TG1), TENSION	
788	3-965-567-01	LID OPEN	
789	3-965-566-01	COVER, LS GUIDE	
* 790	3-965-577-01	PLATE, CAM, LS	
791	3-965-569-01	ARM, EJ	
792	A-7040-427-A	CHASSIS (S1) ASSY, LS	
* 793	3-972-838-01	SPACER, REEL	
D001	8-719-988-42	DIODE GL453	
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (Hi8 MP, ME/MP, REC PROOF)	
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C.C. LOCK)	

6-1-13. MECHANISM CHASSIS ASSEMBLY



Ref. No.	Part No.	Description	Remark
801	X-3947-343-1	GROUND (IM) ASSY, SHAFT	
802	3-965-550-02	SCREW (M1.7X1.6)	
803	1-657-785-11	FP-248 FLEXIBLE BOARD (DEW SENSOR)	
804	3-965-545-01	SPACER, CAPSTAN	
805	3-965-549-01	SCREW (M1.4 X 6.5)	
806	3-966-349-01	HOLDER, FLEXIBLE	
807	3-971-644-01	SLIDER (2), M	
808	3-971-939-01	SCREW (M1.4)	
809	3-947-503-01	SCREW (M1.4X2.5)	
810	A-7040-416-A	BASE BLOCK ASSY, DRUM	
811	3-965-527-01	GEAR, CHANGE	
812	3-965-544-01	GEAR, RELAY	
813	3-331-007-21	WASHER	
814	3-965-546-01	BELT, TIMING	
815	3-965-533-01	ROLLER, LS	
816	3-965-528-01	GEAR, CAM	
817	1-657-784-11	FP-220 FLEXIBLE BOARD	
818	3-965-529-01	PLATE, REGULATOR, TENSION	
819	3-965-536-01	SPRING (LIMITTER ARM T), COIL	
820	X-3945-388-1	SLIDER ASSY, GL	
821	3-965-532-11	ARM, LS	
822	3-965-535-01	SPRING (LIMITTER ARM S), COIL	
823	3-965-542-01	SHIELD, MOTOR	
824	3-965-539-01	GEAR (A)	
825	3-965-538-01	SLEEVE, MOTOR HOLDER	
826	3-965-540-01	HOLDER, MOTOR	
827	3-965-541-01	SHAFT, WORM	
828	3-321-393-01	WASHER, STOPPER	
829	3-965-724-01	SPRING (RETURN, HC), TORSION	
830	A-7040-423-A	ROLLER BLOCK ASSY, HC	
831	X-3945-407-1	ARM ASSY, HC ROLLER	
832	3-965-531-01	ARM, GL	
833	3-965-530-01	PLATE (2), REGULATOR, TENSION	
834	X-3947-915-2	CHASSIS ASSY, MECHANICAL	
835	3-965-526-02	ROLLER, LS GUIDE	
836	3-965-547-01	ARM, HC DRIVING	
837	3-965-534-01	PLATE, PRESS, PINCH	
M901	A-7048-870-A	DRUM ASSY (DGH-0E3A-R)	
M902	8-835-531-32	CAPSTAN ASSY	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	

6-2. ELECTRICAL PARTS LIST

Note:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μ A..., uPA...: μ PA..., uPB...: μ PB..., uPC...: μ PC..., uPD...: μ PD...
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H
- Abbreviation
  Canadian model is abbreviated as CND.
  Brazilian model is abbreviated as BR.
  Hong Kong model is abbreviated as HK.
  Taiwan model is abbreviated as TW.

Ref. No.	Part No.	Description	Remark
	A-7073-786-A	CD-210(NT) BOARD, COMPLETE *************************** (TR315/TR416/416PK/TR516/TR516PK/TR716) (Ref.No. 4,000 Series)	
	A-7073-807-A	CD-211(NT) BOARD, COMPLETE *************************** (TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK) (Ref.No. 9,000 Series) (IC401 is not including to the mounted board)	
		< CAPACITOR >	
C401	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C405	1-135-210-11	TANTALUM CHIP 4.7uF 20%	10V
C406	1-135-214-21	TANTAL. CHIP 4.7uF 20%	20V
		< CONNECTOR >	
CN401	1-766-346-21	CONNECTOR, FFC/FPC 16P	
		< IC >	
IC401	A-7030-960-A	CCD BLOCK ASSY (206 Service) (CCD IMAGER) (TR315/TR416/TR416PK/TR516/TR516PK/TRV16/TRV16PK/TRV36/TRV36PK)	
IC401	A-7030-961-A	CCD BLOCK ASSY (207 Service) (CCD IMAGER) (TR716/TRV43/TRV46/TRV46PK)	
		< COIL >	
L401	1-414-757-11	INDUCTOR 100uH	
		< TRANSISTOR >	
Q402	8-729-117-73	TRANSISTOR 2SC4178-F13F14-T1	
		< RESISTOR >	
R404	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R405	1-216-809-11	METAL CHIP 100 5%	1/16W
R406	1-216-864-11	METAL CHIP 0 5%	1/16W
	A-7073-783-A	CF-60(CN) BOARD, COMPLETE ************************* (TR416/TR416PK/TR516/TR516PK/TR716)	
	A-7073-821-A	CF-60(N) BOARD, COMPLETE (TR315) ************************* (Ref.No. 4,000 Series)	

Be sure to read "Note on the CCD Imager replacement" on page 4-9 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
	A-7073-811-A	CF-61 BOARD, COMPLETE ********************* (TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK) (Ref.No. 9,000 Series)	
		< BATTERY HOLDER >	
BH001	1-550-104-11	HOLDER, BATTERY	
		< BUZZER >	
BZ002	1-529-104-21	BUZZER, PIEZOELECTRIC (TR315/TR416/TR416PK/TR516/TR516PK/TR716)	
		< CAPACITOR >	
C003	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V (TR315/TR416/TR416PK/TR516/TR516PK/TR716)	
		< CONNECTOR >	
CN001	1-774-054-21	CONNECTOR, FFC/FPC (ZIF) 45P	
CN002	1-774-765-11	CONNECTOR, FFC/FPC 8P	
* CN003	1-580-055-21	PIN, CONNECTOR 2P (TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
CN005	1-778-509-21	PIN, CONNECTOR (PC BOARD) 11P (TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
CN006	1-778-508-21	PIN, CONNECTOR (PC BOARD) 6P (TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
CN007	1-779-334-11	CONNECTOR, FFC/FPC 20P (TR416/TR416PK/TR516/TR516PK/TR716)	
* CN008	1-778-283-11	CONNECTOR, FFC/FPC 4P (TR315/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
CN009	1-691-362-11	CONNECTOR, FFC/FPC (ZIF) 24P (TR315/TR416/TR416PK/TR516/TR516PK/TR716)	
		< DIODE >	
D001	8-719-062-16	DIODE 01ZA8.2(TPL3) (TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
D005	8-719-073-03	DIODE MA8082-(K8).S0	
D006	8-719-073-03	DIODE MA8082-(K8).S0	
D008	8-719-073-01	DIODE MA111-(K8).S0	
D010	8-719-073-03	DIODE MA8082-(K8).S0	
		< IC >	
IC001	8-759-573-02	IC BU9729K-E2 (TR315/TR416/TR416PK/TR516/TR516PK/TR716)	

Ref. No.	Part No.	Description	Remark
		< TRANSISTOR >	
Q001	8-729-402-42	TRANSISTOR UN5213-TX	
			(TR315/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
		< RESISTOR >	
R002	1-216-864-11	METAL CHIP 0 5% 1/16W	
R005	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R006	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R007	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R008	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R009	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R011	1-216-855-11	METAL CHIP 680K 5% 1/16W	
			(TR315/TR416/TR416PK/TR516/TR516PK/TR716)
R012	1-216-864-11	METAL CHIP 0 5% 1/16W	
			(TR315/TR416/TR416PK/TR516/TR516PK/TR716)
R013	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R015	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R016	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R019	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R020	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R022	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R023	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R025	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R026	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R028	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
			(TR315/TR416/TR416PK/TR516/TR516PK/TR716)
R029	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R031	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R032	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R034	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
			(TR315/TR416/TR416PK/TR516/TR516PK/TR716)
R035	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
			(TR315/TR416/TR416PK/TR516/TR516PK/TR716)
R036	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R038	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R039	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R041	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R046	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
			(TR315/TR416/TR416PK/TR516/TR516PK/TR716)
R047	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
			(TR315/TR416/TR416PK/TR516/TR516PK/TR716)
R048	1-216-838-11	METAL CHIP 27K 5% 1/16W	
			(TR315/TR416/TR416PK/TR516/TR516PK/TR716)
R051	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R052	1-216-821-11	METAL CHIP 1K 5% 1/16W	
		< SWITCH >	
S003	1-762-851-21	SWITCH, KEY BOARD (DATE)(TR315)	
S003	1-771-138-61	SWITCH, KEY BOARD (DATE)	
			(TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
S004	1-771-029-21	SWITCH, TACTILE (PROGRAM AE)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
S006	1-762-851-21	SWITCH, KEY BOARD (PICTURE EFFECT)(TR315)	
S006	1-771-138-61	SWITCH, KEY BOARD (PICTURE EFFECT)	
			(TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
S008	1-762-851-21	SWITCH, KEY BOARD (COUNTER RESET)(TR315)	
S008	1-771-138-61	SWITCH, KEY BOARD (COUNTER RESET)	
			(TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)

Ref. No.	Part No.	Description	Remark
S010	1-771-029-21	SWITCH, TACTILE (MENU)	
			(TR315/TR416/TR416PK/TR516/TR516PK/TR716)
S010	1-771-138-61	SWITCH, KEY BOARD (MENU)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
S012	1-771-029-21	SWITCH, TACTILE (EXPOSURE)	
S013	1-771-138-61	SWITCH, KEY BOARD (END SEARCH)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
S015	1-771-025-21	SWITCH, ROTARY (SELECT DIAL)(ENCODER)	
S017	1-762-851-21	SWITCH, KEY BOARD (BACK LIGHT)(TR315)	
S017	1-771-029-21	SWITCH, TACTILE (BACK LIGHT)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
S017	1-771-138-61	SWITCH, KEY BOARD (BACK LIGHT)	
			(TR416/TR416PK/TR516/TR516PK/TR716)
S018	1-762-851-21	SWITCH, KEY BOARD (TITLE)(TR315)	
S018	1-771-138-61	SWITCH, KEY BOARD (TITLE)	
			(TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
S020	1-762-442-21	SWITCH, ROTARY (AE DIAL)	
			(TR315/TR416/TR416PK/TR516/TR516PK/TR716)
S021	1-762-851-21	SWITCH, KEY BOARD (TIME)(TR315)	
S021	1-771-138-61	SWITCH, KEY BOARD (TIME)	
			(TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
S022	1-771-138-61	SWITCH, KEY BOARD (DISPLAY)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
S024	1-762-648-21	SWITCH, SLIDE (START/STOP MODE)	

Ref. No.	Part No.	Description	Remark
	A-7073-785-A	DD-117(MMCB0) BOARD, COMPLETE	
		*****************************	
			(TR516/TR516PK/TR716)
	A-7073-806-A	DD-117(VMMIB0) BOARD, COMPLETE	
		******************************	
			(TRV43/TRV46/TRV46PK)
	A-7073-818-A	DD-117(ZL0) BOARD, COMPLETE (TR315)	
		***************************	
	A-7073-824-A	DD-117(VZB0) BOARD, COMPLETE	
		****************************	
			(TRV36/TRV36PK)
	A-7073-858-A	DD-117(ZLC0) BOARD, COMPLETE	
		****************************	
			(TR416/TR416PK)
	A-7073-874-A	DD-117(VZL0) BOARD, COMPLETE	
		****************************	
			(TRV16/TRV16PK)
			(Ref.No. 2,000 Series)
		< CAPACITOR >	
C801	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C802	1-162-960-11	CERAMIC CHIP 220PF 10% 50V	
C803	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C804	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C805	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C806	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C807	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C808	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C809	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C810	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	

Ref. No.	Part No.	Description	Remark
C811	1-162-965-11	CERAMIC CHIP 0.0015uF 10% 50V	
C812	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C813	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C815	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C817	1-113-991-11	TANTAL. CHIP 33uF 20% 16V	
C818	1-163-038-91	CERAMIC CHIP 0.1uF 25V	
C819	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C820	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C821	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C823	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V	
C824	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V	
C825	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V	
C826	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C827	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C828	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C829	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C830	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C831	1-164-489-11	CERAMIC CHIP 0.22uF 10% 16V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C832	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V	
C833	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C834	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V	
C836	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V	
C837	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V	
C838	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V	
C840	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C841	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C842	1-135-216-11	TANTALUM CHIP 10uF 20% 10V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C843	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C844	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C846	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C847	1-164-506-11	CERAMIC CHIP 4.7uF 16V	
C848	1-164-506-11	CERAMIC CHIP 4.7uF 16V	
C849	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C850	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C851	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C852	1-164-505-11	CERAMIC CHIP 2.2uF 16V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C853	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C854	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
		(TR416/TR416PK/TR516/TR516PK/TR716)	
C855	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C857	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C860	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C861	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C861	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
		(TR416/TR416PK/TR516/TR516PK/TR716)	
C862	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C863	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	

Ref. No.	Part No.	Description	Remark
C864	1-113-985-11	TANTAL. CHIP 10uF 20% 20V	
C865	1-117-720-11	CERAMIC CHIP 4.7uF 10V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C866	1-164-505-11	CERAMIC CHIP 2.2uF 16V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C867	1-164-346-11	CERAMIC CHIP 1uF 16V	
		(TR416/TR416PK/TR516/TR516PK/TR716)	
C868	1-135-214-21	TANTAL. CHIP 4.7uF 20% 20V	
C869	1-164-505-11	CERAMIC CHIP 2.2uF 16V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C871	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C872	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C873	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C875	1-164-489-11	CERAMIC CHIP 0.22uF 10% 16V	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
C876	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C877	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
		< CONNECTOR >	
* CN801	1-580-756-21	PIN, CONNECTOR 7P	
CN931	1-774-597-41	CONNECTOR, BOARD TO BOARD 70P	
CN933	1-785-627-21	PIN, CONNECTOR (PC BOARD) 10P	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
CN934	1-766-342-21	CONNECTOR, FFC/FPC 12P	
CN935	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P	
		< DIODE >	
D806	8-719-027-76	DIODE 1SS357-TPH3	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
D809	8-719-027-77	DIODE MA796-TX	
D810	8-719-027-76	DIODE 1SS357-TPH3	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
D812	8-719-027-76	DIODE 1SS357-TPH3	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
D813	8-719-073-03	DIODE MA8082-(K8).S0	
D814	8-719-073-03	DIODE MA8082-(K8).S0	
D815	8-719-073-03	DIODE MA8082-(K8).S0	
D816	8-719-027-76	DIODE 1SS357-TPH3	
D817	8-719-073-02	DIODE MA728-(K8).S0	
D818	8-719-027-76	DIODE 1SS357-TPH3	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
D822	8-719-056-89	DIODE MA8120-TX	
D933	8-719-045-87	DIODE MA4Z082WA-(K8).SO	
		(TR516/TR516PK/TR716/TRV43/TRV46/TRV46PK)	
D933	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D934	8-719-045-87	DIODE MA4Z082WA-(K8).SO	
		(TR516/TR516PK/TR716/TRV43/TRV46/TRV46PK)	
D934	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D936	8-719-045-87	DIODE MA4Z082WA-(K8).SO	
		(TR516/TR516PK/TR716/TRV43/TRV46/TRV46PK)	
D936	8-719-062-16	DIODE 01ZA8.2(TPL3)	
		< FERRITE BEAD >	
FB931	1-414-760-21	FERRITE 0UH	
FB932	1-414-760-21	FERRITE 0UH	
FB933	1-414-760-21	FERRITE 0UH	
		< IC >	
IC801	8-759-384-78	IC SN104241PM-TEB	
IC802	8-759-492-30	IC MB3817PFV-G-BND	
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	

Ref. No.	Part No.	Description	Remark
		< COIL >	
L804	1-412-056-11	INDUCTOR CHIP 4.7uH	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
L805	1-409-532-41	INDUCTOR 33uH	
			(TR315/TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
L805	1-424-675-51	INDUCTOR 33uH	
L806	1-409-532-41	INDUCTOR 33uH	
			(TR315/TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
L806	1-424-675-51	INDUCTOR 33uH	
L807	1-424-674-11	INDUCTOR 22uH	
			(TR315/TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
L807	1-424-674-51	INDUCTOR 22uH	
L808	1-424-674-11	INDUCTOR 22uH	
			(TR315/TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
L808	1-424-674-51	INDUCTOR 22uH	
L809	1-424-674-11	INDUCTOR 22uH	
			(TR315/TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
L809	1-424-674-51	INDUCTOR 22uH	
L810	1-414-396-21	INDUCTOR 4.7uH	
L811	1-414-396-21	INDUCTOR 4.7uH	
L812	1-414-396-21	INDUCTOR 4.7uH	
L813	1-414-396-21	INDUCTOR 4.7uH	
L814	1-414-396-21	INDUCTOR 4.7uH	
L815	1-414-396-21	INDUCTOR 4.7uH	
L816	1-414-396-21	INDUCTOR 4.7uH	
			(TR416/TR416PK/TR516/TR516PK/TR716)
L817	1-414-396-21	INDUCTOR 4.7uH	
L818	1-414-396-21	INDUCTOR 4.7uH	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
L819	1-414-400-11	INDUCTOR 22uH	
L820	1-424-674-11	INDUCTOR 22uH	
			(TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
L820	1-424-674-51	INDUCTOR 22uH	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
L821	1-412-056-11	INDUCTOR CHIP 4.7uH	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
		< IC LINK >	
⚠PS801	1-576-286-21	FUSE, MICRO (1.4A)	
⚠PS803	1-576-286-21	FUSE, MICRO (1.4A)	
⚠PS804	1-576-286-21	FUSE, MICRO (1.4A)	
⚠PS805	1-576-286-21	FUSE, MICRO (1.4A)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
⚠PS806	1-576-286-21	FUSE, MICRO (1.4A)	
			(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
		< TRANSISTOR >	
Q801	8-729-024-48	TRANSISTOR 2SK1830-TE85L	
Q803	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	
Q804	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q804	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
Q805	8-729-024-48	TRANSISTOR 2SK1830-TE85L	
Q806	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q806	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q807	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	
Q808	8-729-046-98	TRANSISTOR CPH6702-TL	
Q809	8-729-046-98	TRANSISTOR CPH6702-TL	
Q810	8-729-046-98	TRANSISTOR CPH6702-TL	
Q813	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q814	8-729-046-98	TRANSISTOR CPH6702-TL	

Ref. No.	Part No.	Description	Remark
Q815	8-729-046-98	TRANSISTOR CPH6702-TL	
Q819	8-729-046-98	TRANSISTOR CPH6702-TL	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q823	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q823	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
Q826	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
			(TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/ TRV36PK/TRV43/TRV46/TRV46PK)
Q826	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
			(TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/ TRV36PK/TRV43/TRV46/TRV46PK)
Q827	8-729-037-61	TRANSISTOR RN2104F(TPL3)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q828	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q828	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q829	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q830	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q831	8-729-041-23	TRANSISTOR NDS356AP	
			(TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/ TRV36PK/TRV43/TRV46/TRV46PK)
Q832	8-729-041-23	TRANSISTOR NDS356AP	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q833	8-729-041-23	TRANSISTOR NDS356AP	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q834	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q835	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q836	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q837	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
			(TR416/TR416PK/TR516/TR516PK/TR716)
Q838	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q839	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q840	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q841	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
			(TR416/TR416PK/TR516/TR516PK/TR716)
Q842	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q843	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q844	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q845	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q846	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
			(TR416/TR416PK/TR516/TR516PK/TR716)
Q847	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q848	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q849	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q850	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
			(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q851	8-729-046-77	TRANSISTOR SI4963DY-T1	
Q852	8-729-017-61	TRANSISTOR 2SB1581-T1	
Q853	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q854	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q855	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description				Remark
Q856	8-729-037-52	TRANSISTOR	2SC4738F-Y/GR(TPL3)			
Q932	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO			(TRV43/TRV46/TRV46PK)
Q932	8-729-042-29	TRANSISTOR	RN1104F(TPL3)			(TRV43/TRV46/TRV46PK)
		< RESISTOR >				
R801	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R802	1-218-893-11	RES,CHIP	82K	0.50%	1/16W	
R803	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R804	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R805	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R806	1-218-879-11	RES,CHIP	22K	0.50%	1/16W	
R807	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R808	1-218-879-11	RES,CHIP	22K	0.50%	1/16W	
R809	1-216-813-11	METAL CHIP	220	5%	1/16W	
R810	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R811	1-218-883-11	RES,CHIP	33K	0.50%	1/16W	
R812	1-218-901-11	RES,CHIP	180K	0.50%	1/16W	
R813	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R814	1-218-879-11	RES,CHIP	22K	0.50%	1/16W	
R815	1-216-813-11	METAL CHIP	220	5%	1/16W	
R816	1-218-879-11	RES,CHIP	22K	0.50%	1/16W	
R817	1-218-879-11	RES,CHIP	22K	0.50%	1/16W	
R818	1-216-813-11	METAL CHIP	220	5%	1/16W	
R819	1-218-887-11	RES,CHIP	47K	0.50%	1/16W	
R820	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R821	1-218-879-11	RES,CHIP	22K	0.50%	1/16W	
R822	1-216-150-91	RES,CHIP	10	5%	1/8W	
R824	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R825	1-218-879-11	RES,CHIP	22K	0.50%	1/16W	
R826	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R827	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R828	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R829	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R830	1-218-883-11	RES,CHIP	33K	0.50%	1/16W	
R831	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R832	1-218-879-11	RES,CHIP	22K	0.50%	1/16W	
R833	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R834	1-218-883-11	RES,CHIP	33K	0.50%	1/16W	
R835	1-218-879-11	RES,CHIP	22K	0.50%	1/16W	
R836	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R837	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R838	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R839	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R840	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R841	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R842	1-218-903-11	RES,CHIP	220K	0.50%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R843	1-218-895-11	RES,CHIP	100K	0.50%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R844	1-216-296-91	SHORT	0			
R845	1-218-847-11	RES,CHIP	1K	0.50%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R846	1-216-296-91	SHORT	0			
R847	1-216-296-91	SHORT	0			
R849	1-216-837-11	METAL CHIP	22K	5%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R850	1-216-857-11	METAL CHIP	1M	5%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)

Ref. No.	Part No.	Description				Remark
R852	1-218-851-11	RES,CHIP	1.5K	0.50%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R853	1-216-849-11	METAL CHIP	220K	5%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R854	1-218-887-11	RES,CHIP	47K	0.50%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R865	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R866	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R867	1-216-296-91	SHORT	0			(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R868	1-216-849-11	METAL CHIP	220K	5%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R870	1-216-857-11	METAL CHIP	1M	5%	1/16W	(TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R871	1-216-857-11	METAL CHIP	1M	5%	1/16W	(TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R872	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R873	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R874	1-216-857-11	METAL CHIP	1M	5%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R875	1-216-849-11	METAL CHIP	220K	5%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R876	1-216-845-11	METAL CHIP	100K	5%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R877	1-216-864-11	METAL CHIP	0	5%	1/16W	(TR315)
R878	1-216-857-11	METAL CHIP	1M	5%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R879	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R880	1-218-895-11	RES,CHIP	100K	0.50%	1/16W	
R881	1-216-864-11	METAL CHIP	0	5%	1/16W	
R882	1-218-903-11	RES,CHIP	220K	0.50%	1/16W	
R883	1-216-841-11	METAL CHIP	47K	5%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R884	1-216-845-11	METAL CHIP	100K	5%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R885	1-216-845-11	METAL CHIP	100K	5%	1/16W	(TR416/TR416PK/TR516/TR516PK/TR716)
R887	1-216-849-11	METAL CHIP	220K	5%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R888	1-216-845-11	METAL CHIP	100K	5%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R889	1-216-837-11	METAL CHIP	22K	5%	1/16W	(TR416/TR416PK/TR516/TR516PK/TR716)
R890	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R891	1-218-895-11	RES,CHIP	100K	0.50%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R892	1-218-903-11	RES,CHIP	220K	0.50%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R893	1-216-835-11	METAL CHIP	15K	5%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R894	1-216-861-11	METAL CHIP	2.2M	5%	1/16W	(TR416/TR416PK/TR516/TR516PK/TR716)
R895	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R896	1-218-903-11	RES,CHIP	220K	0.50%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R897	1-218-891-11	RES,CHIP	68K	0.50%	1/16W	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R898	1-218-895-11	RES,CHIP	100K	0.50%	1/16W	(TR416/TR416PK/TR516/TR516PK/TR716)
R899	1-218-883-11	RES,CHIP	33K	0.50%	1/16W	(TR416/TR416PK/TR516/TR516PK/TR716)

Ref. No.	Part No.	Description			Remark
R900	1-218-895-11	RES,CHIP	100K	0.50%	1/16W
R901	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R902	1-216-864-11	METAL CHIP	0	5%	1/16W
R903	1-216-845-11	METAL CHIP	100K	5%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R904	1-216-849-11	METAL CHIP	220K	5%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R905	1-218-901-11	RES,CHIP	180K	0.50%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R906	1-216-833-11	METAL CHIP	10K	5%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R907	1-218-903-11	RES,CHIP	220K	0.50%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R908	1-216-841-11	METAL CHIP	47K	5%	1/16W
R910	1-216-833-11	METAL CHIP	10K	5%	1/16W
R911	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R912	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R913	1-216-857-11	METAL CHIP	1M	5%	1/16W
R914	1-216-811-11	METAL CHIP	150	5%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R915	1-218-911-11	RES,CHIP	470K	0.50%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R917	1-216-864-11	METAL CHIP	0	5%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R918	1-216-849-11	METAL CHIP	220K	5%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R921	1-216-296-91	SHORT	0		
R922	1-216-296-91	SHORT	0		
R923	1-216-296-91	SHORT	0		
R924	1-216-849-11	METAL CHIP	220K	5%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R925	1-216-864-11	METAL CHIP	0	5%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R926	1-216-821-11	METAL CHIP	1K	5%	1/16W
R933	1-216-821-11	METAL CHIP	1K	5%	1/16W
R934	1-216-821-11	METAL CHIP	1K	5%	1/16W
R935	1-216-821-11	METAL CHIP	1K	5%	1/16W
R936	1-216-821-11	METAL CHIP	1K	5%	1/16W
R937	1-216-821-11	METAL CHIP	1K	5%	1/16W
R938	1-216-821-11	METAL CHIP	1K	5%	1/16W
R939	1-216-821-11	METAL CHIP	1K	5%	1/16W
R941	1-216-821-11	METAL CHIP	1K	5%	1/16W
R943	1-216-029-00	METAL CHIP	150	5%	1/10W
R944	1-216-864-11	METAL CHIP	0	5%	1/16W
		< TRANSFORMER >			
⚠T801	1-429-565-21	TRANSFORMER, CONVERTER			
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
⚠T801	1-431-749-21	TRANSFORMER, DC/DC CONVERTER			
		(TR315/TR416/TR416PK/TR516/TR516PK/TR716)			

FP-249 FLEXIBLE BOARD
****
(Ref.No. 10,000 Series)

Ref. No.	Part No.	Description	Remark
	1-658-214-11	FP-356 FLEXIBLE BOARD	
	3-965-551-01	HOLDER (S), SENSOR	
	3-965-552-01	HOLDER (T), SENSOR	
		< HALL ELEMENT >	
H001	8-719-033-37	ELEMENT, HALL HW-105C	
H002	8-719-033-37	ELEMENT, HALL HW-105C	
		< TRANSISTOR >	
Q001	8-729-907-25	PHOTO TRANSISTOR PT4850F	
Q002	8-729-907-25	PHOTO TRANSISTOR PT4850F	
		< SWITCH >	
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (Hi8 MP, ME/MP, REC PROOF)	
S002	1-572-688-11	SWITCH, PUSH (1 KEY) (C. C. LOCK)	

1-658-213-11 FP-355 FLEXIBLE BOARD
****
(Ref.No. 10,000 Series)

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D001	8-719-988-42	DIODE GL453	

A-7073-439-A LB-54 BOARD, COMPLETE
****
(TR416/TR416PK/TR516/TR516PK/TR716)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C5351	1-113-642-11	TANTAL. CHIP	47uF	20%	10V
C5352	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C5353	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5354	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
C5355	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
C5356	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
		< CONNECTOR >			
CN5351	1-784-564-11	CONNECTOR, BOARD TO BOARD 12P			
		< COIL >			
L5351	1-412-031-11	INDUCTOR CHIP	47uH		
L5352	1-412-029-11	INDUCTOR CHIP	10uH		
		< FLUORESCENT INDICATOR >			
⚠ND5351	1-517-325-21	LAMP, FLUORESCENT (0.55 INCH)			
		< TRANSISTOR >			
Q5351	8-729-039-24	TRANSISTOR FX216-TL1			
		< RESISTOR >			
R5351	1-216-839-11	METAL CHIP	33K	5%	1/16W
		< TRANSFORMER >			
⚠T5351	1-426-849-41	TRANSFORMER, INVERTER			

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Ref. No.	Part No.	Description	Remark
	A-7073-782-A	MA-345(B) BOARD, COMPLETE *************************	(TR516/TR516PK/TR716)
	A-7073-820-A	MA-345(SL) BOARD, COMPLETE **************************	(TR315/TR416/TR416PK) (Ref.No. 9,000 Series)
	A-7073-812-A	MA-346(VIB) BOARD, COMPLETE ***************************	(TRV43/TRV46/TRV46PK)
	A-7073-823-A	MA-346(VZB) BOARD, COMPLETE ***************************	(TRV36/TRV36PK)
	A-7073-873-A	MA-346(VZL) BOARD, COMPLETE ***************************	(TRV16/TRV16PK) (Ref.No. 4,000 Series)
		< CAPACITOR >	
C301	1-107-686-11	TANTAL. CHIP 4.7uF 20% 16V	(TRV43/TRV46/TRV46PK)
C302	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	(TRV43/TRV46/TRV46PK)
C303	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	(TRV43/TRV46/TRV46PK)
C304	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	(TRV43/TRV46/TRV46PK)
C305	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	(TRV43/TRV46/TRV46PK)
C331	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C333	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C335	1-110-563-11	CERAMIC CHIP 0.068uF 10% 16V	
C336	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C337	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C338	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C341	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C342	1-119-749-11	TANTAL. CHIP 33uF 20% 4V	
C348	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C349	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C355	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C367	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C368	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C369	1-135-201-11	TANTALUM CHIP 10uF 20% 4V	
C370	1-115-467-11	CERAMIC CHIP 0.22uF 10% 10V	
C371	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
		< CONNECTOR >	
* CN301	1-695-320-21	PIN, CONNECTOR (1.5MM)(SMD) 2P	
CN303	1-764-526-11	CONNECTOR, FFC/FPC 18P	
		< DIODE >	
D301	8-719-061-86	DIODE DCR2810	(TRV43/TRV46/TRV46PK)
D302	8-749-060-65	DIODE DCC3810	
D303	8-719-061-82	DIODE TLSU1002(TPX1,SONY)	
D305	8-719-073-01	DIODE MA111-(K8).S0	(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
D309	8-719-067-44	DIODE CL-310IRS-X-TU	(TR315/TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK)
D331	8-719-073-03	DIODE MA8082-(K8).S0	
D333	8-719-073-01	DIODE MA111-(K8).S0	
		< FUSE >	
⚠F301	1-533-874-21	FUSE, MICRO (200mA/24V)	
		< IC >	
IC301	8-749-012-83	IC RS-180-T	(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
IC301	8-759-494-30	IC AN2984FH-EB	
IC332	8-759-339-63	IC NJM2118V-TE2	
		< JACK >	
J301	1-568-027-11	JACK, SMALL TYPE (MIC (PLUG IN POWER))	
		< COIL >	
L301	1-216-295-91	SHORT 0	(TR315/TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK)
L301	1-414-754-11	INDUCTOR 10uH	(TRV43/TRV46/TRV46PK)
		< TRANSISTOR >	
Q301	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX	(TRV43/TRV46/TRV46PK)
Q301	8-729-422-51	TRANSISTOR UN5110-QRS-TX	(TR315/TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK)
Q302	8-729-122-63	TRANSISTOR 2SA1226-T1E4	(TRV43/TRV46/TRV46PK)
Q303	8-729-140-75	TRANSISTOR 2SD999-T1-CLCK	
Q304	8-729-402-42	TRANSISTOR UN5213-TX	
Q305	8-729-402-42	TRANSISTOR UN5213-TX	(TR315/TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK)
Q331	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX	
Q332	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	
		< RESISTOR >	
R301	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	(TRV43/TRV46/TRV46PK)
R302	1-216-810-11	METAL CHIP 120 5% 1/16W	(TRV43/TRV46/TRV46PK)
R303	1-216-817-11	METAL CHIP 470 5% 1/16W	
R304	1-216-309-00	METAL CHIP 5.6 5% 1/10W	(TR315/TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK)
R304	1-216-311-00	METAL CHIP 6.8 5% 1/10W	(TRV43/TRV46/TRV46PK)
R305	1-216-302-00	METAL CHIP 2.7 5% 1/10W	
R306	1-216-864-11	METAL CHIP 0 5% 1/16W	
R308	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R308	1-216-864-11	METAL CHIP 0 5% 1/16W	
R309	1-216-847-11	METAL CHIP 150K 5% 1/16W	(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R310	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R311	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R311	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)

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Ref. No.	Part No.	Description			Remark
R312	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TRV43/TRV46/TRV46PK)
R313	1-216-864-11	METAL CHIP	0	5%	1/16W
R314	1-216-815-11	METAL CHIP	330	5%	1/16W
					(TR315/TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK)
R315	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TRV43/TRV46/TRV46PK)
R331	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R332	1-216-817-11	METAL CHIP	470	5%	1/16W
R334	1-216-864-11	METAL CHIP	0	5%	1/16W
R335	1-216-864-11	METAL CHIP	0	5%	1/16W
R338	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R341	1-216-838-11	METAL CHIP	27K	5%	1/16W
R342	1-216-838-11	METAL CHIP	27K	5%	1/16W
R344	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R345	1-216-803-11	METAL CHIP	33	5%	1/16W
R367	1-216-841-11	METAL CHIP	47K	5%	1/16W
R368	1-216-841-11	METAL CHIP	47K	5%	1/16W
R369	1-216-829-11	METAL CHIP	4.7K	5%	1/16W

< SWITCH >

Ref. No.	Part No.	Description
S301	1-692-605-11	SWITCH, SLIDE (LIGHT ON/OFF) (TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
S302	1-771-040-21	SWITCH, PUSH (POWER (PLAYER))
S303	1-771-039-11	SWITCH, PUSH (POWER (CAMERA))

A-7073-813-A PD-107(S6N) BOARD, COMPLETE
****
(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
(Ref.No. 10,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C5501	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5502	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5503	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5504	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5505	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5506	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C5507	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C5508	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5509	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C5511	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C5512	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C5513	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5514	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C5515	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C5516	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C5517	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5518	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C5519	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C5520	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5602	1-107-687-11	TANTAL. CHIP	3.3uF	20%	20V
C5603	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C5604	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5605	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5607	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C5608	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C5610	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C5612	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C5616	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C5618	1-113-994-11	TANTAL. CHIP	6.8uF	20%	16V
C5619	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5620	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5621	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C5622	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C5624	1-107-688-11	TANTAL. CHIP	1.5uF	20%	10V
C5625	1-107-688-11	TANTAL. CHIP	1.5uF	20%	10V
C5633	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C5701	1-104-911-11	TANTAL. CHIP	33uF	20%	10V
C5702	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C5703	1-164-661-11	CERAMIC CHIP	0.018uF	10%	50V
C5704	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
⚠C5705	1-113-521-91	CERAMIC CHIP	12PF	10%	3KV
C5706	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5801	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V

< CONNECTOR >

Ref. No.	Part No.	Description
* CN5501	1-573-984-11	CONNECTOR, BOARD TO BOARD 10P
CN5601	1-691-362-11	CONNECTOR, FFC/FPC (ZIF) 24P
CN5701	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P
CN5801	1-750-360-21	CONNECTOR, FFC/FPC (ZIF) 24P
CN5802	1-785-627-21	PIN, CONNECTOR (PC BOARD) 10P
CN5803	1-778-508-21	PIN, CONNECTOR (PC BOARD) 6P
CN5804	1-778-509-21	PIN, CONNECTOR (PC BOARD) 11P
CN5805	1-766-336-21	CONNECTOR, FFC/FPC 6P

< DIODE >

Ref. No.	Part No.	Description
D5604	8-719-976-96	DIODE MA8047-H-TX
D5605	8-713-102-80	DIODE 1T369-01-T8A
D5703	8-719-058-86	DIODE PG1101H-TR
D5704	8-719-073-01	DIODE MA111-(K8).S0

< FERRITE BEAD >

Ref. No.	Part No.	Description
FB5502	1-500-238-22	FERRITE 0UH
FB5503	1-500-238-22	FERRITE 0UH
FB5603	1-500-238-22	FERRITE 0UH
FB5604	1-500-238-22	FERRITE 0UH

< IC >

Ref. No.	Part No.	Description
IC5501	8-759-530-19	IC MB40D001PFV-G-BND-ER
IC5502	8-759-539-27	IC IR3Y37A4
IC5601	8-759-495-00	IC LZ9GH184
IC5602	8-759-327-01	IC NJM062V(TE2)
IC5701	8-759-075-70	IC TA75S393F-TE85R
IC5801	8-759-573-02	IC BU9729K-E2

< COIL >

Ref. No.	Part No.	Description	
L5501	1-414-754-11	INDUCTOR	10uH
L5605	1-412-956-21	INDUCTOR	27uH
L5701	1-416-919-21	INDUCTOR	150uH

< TRANSISTOR >

Ref. No.	Part No.	Description
Q5501	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX
Q5601	8-729-402-42	TRANSISTOR UN5213-TX
Q5602	8-729-402-42	TRANSISTOR UN5213-TX
Q5605	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX

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Ref. No.	Part No.	Description			Remark
Q5606	8-729-420-24	TRANSISTOR	2SB1218A-QRS-TX		
Q5607	8-729-230-63	TRANSISTOR	2SD1819A-QRS-TX		
Q5608	8-729-420-24	TRANSISTOR	2SB1218A-QRS-TX		
Q5701	8-729-039-43	TRANSISTOR	FP216-TL		
Q5702	8-729-015-74	TRANSISTOR	UN5111-TX		
		< RESISTOR >			
R5501	1-216-840-11	METAL CHIP	39K	5%	1/16W
R5505	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5512	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5513	1-216-834-11	METAL CHIP	12K	5%	1/16W
R5516	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5517	1-216-835-11	METAL CHIP	15K	5%	1/16W
R5518	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5520	1-216-852-11	METAL CHIP	390K	5%	1/16W
R5521	1-216-834-11	METAL CHIP	12K	5%	1/16W
R5522	1-216-840-11	METAL CHIP	39K	5%	1/16W
R5528	1-218-895-11	RES,CHIP	100K	0.50%	1/16W
R5531	1-216-821-11	METAL CHIP	1K	5%	1/16W
R5532	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5537	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R5541	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R5542	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R5544	1-216-821-11	METAL CHIP	1K	5%	1/16W
R5545	1-216-864-11	METAL CHIP	0	5%	1/16W
R5603	1-216-864-11	METAL CHIP	0	5%	1/16W
R5604	1-216-864-11	METAL CHIP	0	5%	1/16W
R5607	1-216-864-11	METAL CHIP	0	5%	1/16W
R5608	1-216-864-11	METAL CHIP	0	5%	1/16W
R5610	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5612	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5613	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5615	1-216-848-11	METAL CHIP	180K	5%	1/16W
R5617	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5621	1-216-857-11	METAL CHIP	1M	5%	1/16W
R5622	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5623	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5624	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5625	1-218-895-11	RES,CHIP	100K	0.50%	1/16W
R5627	1-218-901-11	RES,CHIP	180K	0.50%	1/16W
R5628	1-216-864-11	METAL CHIP	0	5%	1/16W
R5630	1-216-821-11	METAL CHIP	1K	5%	1/16W
R5632	1-216-864-11	METAL CHIP	0	5%	1/16W
R5637	1-216-864-11	METAL CHIP	0	5%	1/16W
R5640	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5641	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5643	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5644	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5651	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R5652	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R5653	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R5654	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R5657	1-216-864-11	METAL CHIP	0	5%	1/16W
R5658	1-216-864-11	METAL CHIP	0	5%	1/16W
R5659	1-216-864-11	METAL CHIP	0	5%	1/16W
R5660	1-216-864-11	METAL CHIP	0	5%	1/16W
R5661	1-216-864-11	METAL CHIP	0	5%	1/16W
R5669	1-216-864-11	METAL CHIP	0	5%	1/16W
R5670	1-216-864-11	METAL CHIP	0	5%	1/16W
R5671	1-216-864-11	METAL CHIP	0	5%	1/16W
R5674	1-216-864-11	METAL CHIP	0	5%	1/16W
R5676	1-216-864-11	METAL CHIP	0	5%	1/16W
R5679	1-216-805-11	METAL CHIP	47	5%	1/16W
R5680	1-216-805-11	METAL CHIP	47	5%	1/16W
R5681	1-216-805-11	METAL CHIP	47	5%	1/16W
R5685	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5686	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5688	1-216-864-11	METAL CHIP	0	5%	1/16W
R5692	1-216-853-11	METAL CHIP	470K	5%	1/16W
R5694	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5695	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5696	1-216-864-11	METAL CHIP	0	5%	1/16W
R5703	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R5704	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R5705	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5706	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R5707	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5708	1-216-810-11	METAL CHIP	120	5%	1/16W
R5709	1-216-817-11	METAL CHIP	470	5%	1/16W
R5710	1-216-864-11	METAL CHIP	0	5%	1/16W
R5801	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R5802	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R5803	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R5804	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R5805	1-216-838-11	METAL CHIP	27K	5%	1/16W
R5806	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R5811	1-216-864-11	METAL CHIP	0	5%	1/16W
R5812	1-216-855-11	METAL CHIP	680K	5%	1/16W
		< SWITCH >			
S5801	1-692-088-41	SWITCH, TACTILE (LCD BRIGHT +)			
S5802	1-692-088-41	SWITCH, TACTILE (LCD BRIGHT -)			
S5803	1-692-088-41	SWITCH, TACTILE (VOLUME +)			
S5804	1-692-088-41	SWITCH, TACTILE (VOLUME -)			
		< TRANSFORMER >			
⚠T5701	1-433-452-11	TRANSFORMER, INVERTER			

A-7073-788-A PJ-90 BOARD, COMPLETE
****
(TR315/TR416/TR416PK/TR516/TR516PK/TR716)
(Ref.No. 4,000 Series)

A-7073-809-A PJ-91(V) BOARD, COMPLETE
****
(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
(Ref.No. 9,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C101	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
		< CONNECTOR >			
* CN101	1-764-521-11	CONNECTOR, FFC/FPC (ZIF) 12P			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D102	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D103	8-719-062-16	DIODE 01ZA8.2(TPL3)	
		< JACK >	
J101	1-537-747-41	TERMINAL BOARD (VIDEO/AUDIO)	
		< COIL >	
L101	1-414-072-11	INDUCTOR 1uH	
L102	1-216-295-91	SHORT 0	
		< TRANSISTOR >	
Q101	8-729-101-07	TRANSISTOR 2SB798-T1-DLDK	
Q102	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	
		< RESISTOR >	
R101	1-216-864-11	METAL CHIP 0 5%	1/16W
R102	1-216-138-00	METAL CHIP 3.3 5%	1/8W
R103	1-216-830-11	METAL CHIP 5.6K 5%	1/16W
R104	1-216-820-11	METAL CHIP 820 5%	1/16W
R105	1-216-836-11	METAL CHIP 18K 5%	1/16W
R109	1-216-821-11	METAL CHIP 1K 5%	1/16W

Ref. No.	Part No.	Description	Remark
	A-7073-789-A	SE-80(MM) BOARD, COMPLETE (TR716) ***************************	
	A-7073-810-A	SE-81(VMM) BOARD, COMPLETE *************************** (TRV43/TRV46/TRV46PK)	
	A-7073-825-A	SE-81(V) BOARD, COMPLETE ************************* (TRV16/TRV16PK/TRV36/TRV36PK) (Ref.No. 9,000 Series)	
		< CAPACITOR >	
C451	1-164-004-11	CERAMIC CHIP 0.1uF 10% (TR716/TRV43/TRV46/TRV46PK)	25V
C452	1-164-004-11	CERAMIC CHIP 0.1uF 10% (TR716/TRV43/TRV46/TRV46PK)	25V
C453	1-104-847-11	TANTAL. CHIP 22uF 20% (TR716/TRV43/TRV46/TRV46PK)	4V
C454	1-104-847-11	TANTAL. CHIP 22uF 20% (TR716/TRV43/TRV46/TRV46PK)	4V
C457	1-164-343-11	CERAMIC CHIP 0.056uF 10% (TR716/TRV43/TRV46/TRV46PK)	25V
C458	1-164-343-11	CERAMIC CHIP 0.056uF 10% (TR716/TRV43/TRV46/TRV46PK)	25V
C459	1-164-343-11	CERAMIC CHIP 0.056uF 10% (TR716/TRV43/TRV46/TRV46PK)	25V
C460	1-110-666-11	ELECT CHIP 22uF 20% (TR716/TRV43/TRV46/TRV46PK)	6.3V
C461	1-164-343-11	CERAMIC CHIP 0.056uF 10% (TR716/TRV43/TRV46/TRV46PK)	25V
C462	1-110-666-11	ELECT CHIP 22uF 20% (TR716/TRV43/TRV46/TRV46PK)	6.3V
C464	1-110-501-11	CERAMIC CHIP 0.33uF 10% (TR716/TRV43/TRV46/TRV46PK)	16V
C465	1-135-259-11	TANTAL. CHIP 10uF 20% (TR716/TRV43/TRV46/TRV46PK)	6.3V
C466	1-162-970-11	CERAMIC CHIP 0.01uF 10% (TR716/TRV43/TRV46/TRV46PK)	25V
		< CONNECTOR >	
CN451	1-766-646-21	CONNECTOR, FFC/FPC 10P (TR716/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
		< DIODE >	
D451	8-719-045-87	DIODE MA4Z082WA-(K8).SO (TRV43/TRV46:US,E,HK/TRV46PK)	
D451	8-719-062-16	DIODE 01ZA8.2(TPL3) (TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
		< IC >	
IC451	8-759-489-19	IC uPC6756GR-8JG-E2 (TR716/TRV43/TRV46/TRV46PK)	
		< JACK >	
J451	1-695-514-11	JACK (SMALL TYPE) 1P (HEADPHONE) (TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
		< COIL >	
L451	1-414-754-11	INDUCTOR 10uH (TR716/TRV43/TRV46/TRV46PK)	
L453	1-216-295-91	SHORT 0 (TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
		< RESISTOR >	
R451	1-216-837-11	METAL CHIP 22K 5% (TR716/TRV43/TRV46/TRV46PK)	1/16W
R452	1-216-837-11	METAL CHIP 22K 5% (TR716/TRV43/TRV46/TRV46PK)	1/16W
R453	1-216-837-11	METAL CHIP 22K 5% (TR716/TRV43/TRV46/TRV46PK)	1/16W
R454	1-216-837-11	METAL CHIP 22K 5% (TR716/TRV43/TRV46/TRV46PK)	1/16W
R455	1-216-864-11	METAL CHIP 0 5% (TR716/TRV43/TRV46/TRV46PK)	1/16W
R456	1-216-857-11	METAL CHIP 1M 5% (TR716/TRV43/TRV46/TRV46PK)	1/16W
R458	1-216-833-11	METAL CHIP 10K 5% (TR716/TRV43/TRV46/TRV46PK)	1/16W
R459	1-216-857-11	METAL CHIP 1M 5% (TR716/TRV43/TRV46/TRV46PK)	1/16W
R461	1-216-835-11	METAL CHIP 15K 5% (TR716/TRV43/TRV46/TRV46PK)	1/16W
R463	1-216-809-11	METAL CHIP 100 5% (TR716/TRV43/TRV46/TRV46PK)	1/16W
		< SENSOR >	
SE451	1-803-041-11	SENSOR, ANGULAR VELOCITY (PITCH) (TR716/TRV43/TRV46/TRV46PK)	
SE452	1-803-041-21	SENSOR, ANGULAR VELOCITY (YAW) (TR716/TRV43/TRV46/TRV46PK)	

Ref. No.	Part No.	Description	Remark
	A-7094-110-A	VC-215(ZCB0) BOARD, COMPLETE ***************************** (TR516/TR516PK)	
	A-7094-111-A	VC-215(MMCB0) BOARD, COMPLETE (TR716) ******************************	

Ref. No.	Part No.	Description				Remark
	A-7094-112-A	VC-215(ZSL0) BOARD, COMPLETE (TR315)				
		*****************************				
	A-7094-117-A	VC-215(VZB0) BOARD, COMPLETE				
		******************************				
						(TRV36/TRV36PK)
	A-7094-118-A	VC-215(VMMIB0) BOARD, COMPLETE				
		*******************************				
						(TRV43/TRV46/TRV46PK)
	A-7094-179-A	VC-215(ZLCO) BOARD, COMPLETE				
		*****************************				
						(TR416/TR416PK)
	A-7094-204-A	VC-215(VZLO) BOARD, COMPLETE				
		*****************************				
						(TRV16/TRV16PK)
						(Ref.No. 1,000 Series)
		< CAPACITOR >				
C001	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C004	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C006	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V	
C007	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V	
C008	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C009	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	
C010	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C011	1-162-926-11	CERAMIC CHIP	82PF	5%	50V	
C012	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C017	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C018	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C019	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C021	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C022	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C023	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C024	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C026	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C027	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C028	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C029	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C030	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C031	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C032	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C033	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C034	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C035	1-162-920-11	CERAMIC CHIP	27PF	5%	50V	
C036	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C037	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C039	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C041	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C042	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C043	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C048	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C049	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C050	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C052	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C053	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C055	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C058	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C059	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	
C060	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	
C061	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	

Ref. No.	Part No.	Description			Remark
C062	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C065	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C068	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C069	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C070	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V
C071	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C072	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C073	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C074	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C075	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C076	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C078	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C079	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
C080	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C081	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C082	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C083	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C085	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C086	1-115-156-11	CERAMIC CHIP	1uF		10V
C088	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C089	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C090	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C152	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C156	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C158	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C159	1-164-346-11	CERAMIC CHIP	1uF		16V
C160	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C161	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C163	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C166	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C168	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C169	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C170	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C182	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C184	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C185	1-126-246-11	ELECT CHIP	220uF	20%	4V
C186	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C188	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C190	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C191	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C192	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C202	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C204	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C205	1-115-156-11	CERAMIC CHIP	1uF		10V
C206	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C207	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C209	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C210	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
C211	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C212	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C217	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C218	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C219	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C224	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C225	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C226	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C227	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C229	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C230	1-115-156-11	CERAMIC CHIP	1uF		10V
C232	1-164-156-11	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remark
C233	1-162-638-11	CERAMIC CHIP	1uF		16V
C234	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C235	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C237	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C239	1-115-156-11	CERAMIC CHIP	1uF		10V
C245	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C246	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C247	1-162-638-11	CERAMIC CHIP	1uF		16V
C250	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C301	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C304	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C307	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C308	1-162-638-11	CERAMIC CHIP	1uF		16V
C309	1-135-202-21	TANTAL. CHIP	22uF	20%	4V
C312	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C316	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C318	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C319	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C320	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C322	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C325	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C326	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C328	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C332	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C333	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C335	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C337	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C338	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C340	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C342	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C346	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C347	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C349	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C371	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
C372	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C378	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
C380	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
C381	1-164-346-11	CERAMIC CHIP	1uF		16V
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
C382	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
C383	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
C384	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
C385	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
C386	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
C387	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
C388	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
C402	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C404	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C405	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C406	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C410	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C411	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C412	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C414	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C415	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C416	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C417	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C418	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C419	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C420	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C451	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C452	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C453	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C454	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C455	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C456	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C457	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C458	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C459	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C460	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C461	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C462	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C463	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C464	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C465	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C467	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C468	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C469	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C470	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C471	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C472	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C473	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C474	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C475	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C476	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C478	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C480	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C483	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C484	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C485	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C486	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C487	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C488	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C489	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C501	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C502	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C503	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C504	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
C506	1-115-156-11	CERAMIC CHIP	1uF		10V
C507	1-115-156-11	CERAMIC CHIP	1uF		10V
C509	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C511	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C512	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C513	1-115-156-11	CERAMIC CHIP	1uF		10V
C514	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C515	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C516	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C517	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C518	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C519	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C520	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C521	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description			Remark
C522	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C523	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C524	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C525	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C526	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C527	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C528	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C529	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C530	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C531	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C552	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C553	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C554	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C555	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C556	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C557	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C558	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C559	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C560	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C561	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C562	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C563	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C564	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C565	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C566	1-115-156-11	CERAMIC CHIP	1uF		10V
C567	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C569	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C570	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C571	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C572	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C605	1-135-177-21	TANTALUM CHIP	1uF	20%	20V (TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
C607	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C610	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C611	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C612	1-119-749-11	TANTAL. CHIP	33uF	20%	4V
C613	1-162-638-11	CERAMIC CHIP	1uF		16V
C615	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C616	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C617	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C618	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C619	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C620	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C621	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C622	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C623	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C624	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C625	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C626	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C627	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C628	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C629	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C630	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C636	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C637	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C751	1-135-201-11	TANTALUM CHIP	10uF	20%	4V (TRV43/TRV46/TRV46PK)
C752	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V (TRV43/TRV46/TRV46PK)
C753	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TRV43/TRV46/TRV46PK)
C754	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V (TRV43/TRV46/TRV46PK)
C755	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V (TRV43/TRV46/TRV46PK)
C756	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TRV43/TRV46/TRV46PK)
C757	1-135-201-11	TANTALUM CHIP	10uF	20%	4V (TRV43/TRV46/TRV46PK)
C758	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (TRV43/TRV46/TRV46PK)
C759	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TRV43/TRV46/TRV46PK)
C760	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V (TRV43/TRV46/TRV46PK)
C761	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TRV43/TRV46/TRV46PK)
C762	1-164-668-11	CERAMIC CHIP	510PF	5%	50V (TRV43/TRV46/TRV46PK)
C763	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TRV43/TRV46/TRV46PK)
C764	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V (TRV43/TRV46/TRV46PK)
C765	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TRV43/TRV46/TRV46PK)
C766	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (TRV43/TRV46/TRV46PK)
C767	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V (TRV43/TRV46/TRV46PK)
C768	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V (TRV43/TRV46/TRV46PK)
C769	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V (TRV43/TRV46/TRV46PK)
C770	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V (TRV43/TRV46/TRV46PK)
C771	1-162-921-11	CERAMIC CHIP	33PF	5%	50V (TRV43/TRV46/TRV46PK)
C772	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (TRV43/TRV46/TRV46PK)
C773	1-162-922-11	CERAMIC CHIP	39PF	5%	50V (TRV43/TRV46/TRV46PK)
C774	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (TRV43/TRV46/TRV46PK)
C775	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V (TRV43/TRV46/TRV46PK)
C776	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TRV43/TRV46/TRV46PK)
C777	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TRV43/TRV46/TRV46PK)
C778	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TRV43/TRV46/TRV46PK)
C781	1-104-847-11	TANTAL. CHIP	22uF	20%	4V (TRV43/TRV46/TRV46PK)
		< CONNECTOR >			
CN001	1-766-346-21	CONNECTOR, FFC/FPC 16P			
CN501	1-779-332-11	CONNECTOR, FFC/FPC 16P			
CN551	1-573-363-21	CONNECTOR, FFC/FPC 23P			
CN551	1-691-361-11	CONNECTOR, FFC/FPC (ZIF) 23P			
CN901	1-766-644-21	CONNECTOR, FFC/FPC 8P			
CN902	1-766-342-21	CONNECTOR, FFC/FPC 12P			
CN904	1-691-374-11	CONNECTOR, FFC/FPC 10P			(TR716/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
CN905	1-766-646-21	CONNECTOR, FFC/FPC 10P			
CN906	1-766-342-21	CONNECTOR, FFC/FPC 12P			
CN908	1-766-345-21	CONNECTOR, FFC/FPC 15P			

Ref. No.	Part No.	Description	Remark
CN908	1-774-639-21	CONNECTOR, FFC/FPC 15P	
CN909	1-764-703-11	CONNECTOR, FFC/FPC (LIF) 4P (TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
CN910	1-766-346-21	CONNECTOR, FFC/FPC 16P	
CN911	1-785-760-21	CONNECTOR, FFC/FPC (ZIF) 45P	
CN915	1-774-600-41	CONNECTOR, BOARD TO BOARD 70P	
CN916	1-766-348-21	CONNECTOR, FFC/FPC 18P	
		< DIODE >	
D002	8-719-073-01	DIODE MA111-(K8).S0	
D201	8-719-055-86	DIODE KV1470TL1-3	
D202	8-719-055-86	DIODE KV1470TL1-3	
D371	8-719-073-01	DIODE MA111-(K8).S0 (TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
D502	8-713-103-84	DIODE 1T379-01-T8A	
D551	8-719-073-01	DIODE MA111-(K8).S0	
D601	8-719-073-02	DIODE MA728-(K8).S0	
D602	8-719-073-02	DIODE MA728-(K8).S0	
D604	8-719-073-01	DIODE MA111-(K8).S0	
D608	8-719-073-01	DIODE MA111-(K8).S0	
D609	8-719-049-09	DIODE 1SS367-T3SONY	
D610	8-719-073-02	DIODE MA728-(K8).S0	
		< FERRITE BEAD >	
FB001	1-216-864-11	METAL CHIP 1/16W	
FB002	1-414-229-11	INDUCTOR CHIP 0UH	
FB003	1-216-864-11	METAL CHIP 1/16W	
FB004	1-414-229-11	INDUCTOR CHIP 0UH	
FB201	1-414-228-11	INDUCTOR CHIP 0UH	
FB401	1-414-229-11	INDUCTOR CHIP 0UH	
FB502	1-216-864-11	METAL CHIP 1/16W	
FB503	1-500-284-21	INDUCTOR CHIP 0UH	
FB504	1-500-284-21	INDUCTOR CHIP 0UH	
FB505	1-500-284-21	INDUCTOR CHIP 0UH	
		< IC >	
IC001	8-752-079-46	IC CXA2084R-T6	
IC151	8-759-357-63	IC AN2220FH-EB	
IC152	8-759-169-02	IC MB88344BPFV-G-BND-ER	
IC152	8-759-536-93	IC M62371GP-600D	
IC201	8-759-494-73	IC MB90097PFV-G-104-ER	
IC202	8-759-494-55	IC MB87F126DPFF-G-BND	
IC301	8-759-494-30	IC AN2984FH-EB	
IC371	8-759-494-52	IC BA7783FS-E2 (TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
IC401	8-759-445-94	IC AK6480AM-E2	
IC402	8-759-574-45	IC MB91191PFF-G-130-BND-ER	
IC451	8-759-327-67	IC LB1950V-TLM	
IC452	8-759-327-61	IC LB8112V-TLM	
IC501	8-752-384-70	IC CXD2486R-T4	
IC502	8-759-534-77	IC AD9800JDSTRL	
IC551	8-759-444-87	IC NJM324V(TE2)	
IC552	8-759-475-79	IC uPD16833AG3-E2	
IC602	8-759-424-79	IC S-8423YFS-T2	
IC603	8-759-536-72	IC TL1596CPWR	
IC604	8-759-574-83	IC S579225PZ-TEB	
IC751	8-759-498-52	IC LA9511W-TBM (TRV43/TRV46/TRV46PK)	
		< COIL >	
L001	1-414-406-11	INDUCTOR 220uH	
L002	1-412-952-11	INDUCTOR 12uH	
L003	1-414-406-11	INDUCTOR 220uH	
L004	1-414-754-11	INDUCTOR 10uH	
L005	1-412-948-11	INDUCTOR 5.6uH	
L006	1-412-963-11	INDUCTOR 100uH	
L008	1-412-280-31	INDUCTOR 330uH	
L009	1-410-656-11	INDUCTOR CHIP 150uH	
L010	1-410-657-21	INDUCTOR CHIP 180uH	
L011	1-412-956-21	INDUCTOR 27uH	
L012	1-412-955-11	INDUCTOR 22uH	
L013	1-412-944-11	INDUCTOR 2.7uH	
L015	1-412-951-11	INDUCTOR 10uH	
L016	1-412-946-11	INDUCTOR 3.9uH	
L018	1-410-656-11	INDUCTOR CHIP 150uH	
L019	1-412-957-11	INDUCTOR 33uH	
L204	1-410-658-31	INDUCTOR CHIP 220uH	
L205	1-412-955-11	INDUCTOR 22uH	
L206	1-412-945-11	INDUCTOR 3.3uH	
L502	1-216-295-91	SHORT 0	
L552	1-414-398-11	INDUCTOR 10uH	
L602	1-414-754-11	INDUCTOR 10uH	
L751	1-412-948-11	INDUCTOR 5.6uH	(TRV43/TRV46/TRV46PK)
L752	1-412-957-11	INDUCTOR 33uH	(TRV43/TRV46/TRV46PK)
L753	1-412-957-11	INDUCTOR 33uH	(TRV43/TRV46/TRV46PK)
		< TRANSISTOR >	
Q001	8-729-047-19	TRANSISTOR 2SA1965-S-TL	
Q002	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q003	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q012	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q017	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q019	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q019	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
Q020	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q021	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q022	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q023	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q024	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q025	8-729-037-89	TRANSISTOR 2SC4627J-C(K8).S0	
Q026	8-729-047-19	TRANSISTOR 2SA1965-S-TL	
Q027	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q028	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q028	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
Q029	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q030	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q032	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q033	8-729-047-19	TRANSISTOR 2SA1965-S-TL	
Q034	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q036	8-729-037-89	TRANSISTOR 2SC4627J-C(K8).S0	
Q038	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q038	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
Q039	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q040	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q040	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
Q041	8-729-230-72	TRANSISTOR 2SA1362-YG-EL	
Q042	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q042	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
Q043	8-729-047-19	TRANSISTOR 2SA1965-S-TL	
Q044	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	

Ref. No.	Part No.	Description		Remark
Q044	8-729-042-29	TRANSISTOR	RN1104F(TPL3)	
Q151	8-729-037-61	TRANSISTOR	RN2104F(TPL3)	
Q153	8-729-040-77	TRANSISTOR	2SC5376-B(TE85L)	
Q202	8-729-037-52	TRANSISTOR	2SC4738F-Y/GR(TPL3)	
Q203	8-729-037-53	TRANSISTOR	2SA1832F-Y/GR(TPL3)	
Q204	8-729-037-52	TRANSISTOR	2SC4738F-Y/GR(TPL3)	
Q205	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	
Q205	8-729-042-29	TRANSISTOR	RN1104F(TPL3)	
Q208	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	
Q208	8-729-042-29	TRANSISTOR	RN1104F(TPL3)	
Q213	8-729-037-52	TRANSISTOR	2SC4738F-Y/GR(TPL3)	(TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q214	8-729-037-52	TRANSISTOR	2SC4738F-Y/GR(TPL3)	(TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q215	8-729-037-52	TRANSISTOR	2SC4738F-Y/GR(TPL3)	(TR315/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q216	8-729-037-52	TRANSISTOR	2SC4738F-Y/GR(TPL3)	(TR416/TR416PK/TR516/TR516PK/TR716)
Q217	8-729-037-53	TRANSISTOR	2SA1832F-Y/GR(TPL3)	
Q302	8-729-042-74	TRANSISTOR	UN9216J-(K8).SO	
Q302	8-729-045-78	TRANSISTOR	RN1110F(TPL3)	(TR315/TR416/TR416PK/TRV16/TRV16PK/TRV36/TRV46)
Q305	8-729-037-63	TRANSISTOR	UN9115J-(K8).SO	
Q306	8-729-037-76	TRANSISTOR	UN9215J-(K8).SO	
Q308	8-729-037-61	TRANSISTOR	RN2104F(TPL3)	
Q309	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	
Q309	8-729-042-29	TRANSISTOR	RN1104F(TPL3)	
Q371	8-729-042-74	TRANSISTOR	UN9216J-(K8).SO	
Q371	8-729-045-78	TRANSISTOR	RN1110F(TPL3)	(TR315/TR416/TR416PK/TRV16/TRV16PK/TRV36/TRV46)
Q452	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	
Q452	8-729-042-29	TRANSISTOR	RN1104F(TPL3)	
Q453	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	
Q453	8-729-042-29	TRANSISTOR	RN1104F(TPL3)	
Q454	8-729-037-53	TRANSISTOR	2SA1832F-Y/GR(TPL3)	
Q455	8-729-037-53	TRANSISTOR	2SA1832F-Y/GR(TPL3)	
Q456	8-729-037-52	TRANSISTOR	2SC4738F-Y/GR(TPL3)	
Q501	8-729-037-53	TRANSISTOR	2SA1832F-Y/GR(TPL3)	
Q551	8-729-037-53	TRANSISTOR	2SA1832F-Y/GR(TPL3)	
Q552	8-729-037-52	TRANSISTOR	2SC4738F-Y/GR(TPL3)	
Q553	8-729-037-52	TRANSISTOR	2SC4738F-Y/GR(TPL3)	
Q607	8-729-041-43	TRANSISTOR	HN1L02FU(TE85R)	
Q608	8-729-037-52	TRANSISTOR	2SC4738F-Y/GR(TPL3)	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q609	8-729-037-52	TRANSISTOR	2SC4738F-Y/GR(TPL3)	(TRV43/TRV46/TRV46PK)
Q610	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	
Q610	8-729-042-29	TRANSISTOR	RN1104F(TPL3)	
Q611	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	(TRV43/TRV46/TRV46PK)
Q611	8-729-042-29	TRANSISTOR	RN1104F(TPL3)	(TRV43/TRV46/TRV46PK)
Q620	8-729-042-58	TRANSISTOR	UN9111J-(K8).SO	

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R001	1-216-864-11	METAL CHIP	0	5%	1/16W	
R002	1-216-864-11	METAL CHIP	0	5%	1/16W	
R003	1-216-806-11	RES,CHIP	56	5%	1/16W	
R004	1-216-818-11	METAL CHIP	560	5%	1/16W	
R005	1-216-809-11	METAL CHIP	100	5%	1/16W	
R006	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R007	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R008	1-216-814-11	METAL CHIP	270	5%	1/16W	
R009	1-216-813-11	METAL CHIP	220	5%	1/16W	
R014	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R015	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R020	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R021	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R022	1-216-295-91	SHORT	0			
R023	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R025	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R026	1-216-816-11	METAL CHIP	390	5%	1/16W	
R027	1-216-816-11	METAL CHIP	390	5%	1/16W	
R029	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R031	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R032	1-216-816-11	METAL CHIP	390	5%	1/16W	
R033	1-216-816-11	METAL CHIP	390	5%	1/16W	
R034	1-216-864-11	METAL CHIP	0	5%	1/16W	
R035	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R037	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R038	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R039	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R040	1-216-864-11	METAL CHIP	0	5%	1/16W	
R043	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R045	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R046	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R047	1-216-864-11	METAL CHIP	0	5%	1/16W	
R048	1-216-864-11	METAL CHIP	0	5%	1/16W	
R049	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R050	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R051	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R052	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R055	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R056	1-216-855-11	METAL CHIP	680K	5%	1/16W	
R057	1-216-819-11	METAL CHIP	680	5%	1/16W	
R058	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R059	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R060	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R061	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R062	1-216-818-11	METAL CHIP	560	5%	1/16W	
R063	1-216-817-11	METAL CHIP	470	5%	1/16W	
R064	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R065	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R066	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R067	1-216-817-11	METAL CHIP	470	5%	1/16W	
R068	1-216-817-11	METAL CHIP	470	5%	1/16W	
R069	1-216-864-11	METAL CHIP	0	5%	1/16W	
R072	1-216-864-11	METAL CHIP	0	5%	1/16W	
R073	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R074	1-216-816-11	METAL CHIP	390	5%	1/16W	
R075	1-216-817-11	METAL CHIP	470	5%	1/16W	
R076	1-216-816-11	METAL CHIP	390	5%	1/16W	
R078	1-216-815-11	METAL CHIP	330	5%	1/16W	
R079	1-216-815-11	METAL CHIP	330	5%	1/16W	
R080	1-216-813-11	METAL CHIP	220	5%	1/16W	
R081	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R082	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R083	1-216-820-11	METAL CHIP	820	5%	1/16W	
R084	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R085	1-216-833-11	METAL CHIP	10K	5%	1/16W	

Ref. No.	Part No.	Description			Remark
R087	1-216-821-11	METAL CHIP	1K	5%	1/16W
R088	1-216-864-11	METAL CHIP	0	5%	1/16W
R092	1-216-809-11	METAL CHIP	100	5%	1/16W
R093	1-216-833-11	METAL CHIP	10K	5%	1/16W
R094	1-216-815-11	METAL CHIP	330	5%	1/16W
R095	1-216-839-11	METAL CHIP	33K	5%	1/16W
R096	1-216-813-11	METAL CHIP	220	5%	1/16W
R098	1-216-817-11	METAL CHIP	470	5%	1/16W
R099	1-216-817-11	METAL CHIP	470	5%	1/16W
R101	1-216-837-11	METAL CHIP	22K	5%	1/16W
R102	1-216-834-11	METAL CHIP	12K	5%	1/16W
R103	1-216-816-11	METAL CHIP	390	5%	1/16W
R104	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R105	1-216-819-11	METAL CHIP	680	5%	1/16W
R106	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R107	1-216-833-11	METAL CHIP	10K	5%	1/16W
R109	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R110	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R112	1-216-833-11	METAL CHIP	10K	5%	1/16W
R113	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R152	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R167	1-216-803-11	METAL CHIP	33	5%	1/16W
R170	1-216-804-11	METAL CHIP	39	5%	1/16W
R175	1-216-837-11	METAL CHIP	22K	5%	1/16W
R177	1-216-821-11	METAL CHIP	1K	5%	1/16W
R179	1-216-815-11	METAL CHIP	330	5%	1/16W
R183	1-218-876-11	RES,CHIP	16K	0.50%	1/16W
R184	1-218-847-11	RES,CHIP	1K	0.50%	1/16W
R185	1-216-295-91	SHORT	0		
R186	1-216-295-91	SHORT	0		
R187	1-216-295-91	SHORT	0		
R188	1-216-864-11	METAL CHIP	0	5%	1/16W
R189	1-216-295-91	SHORT	0		
R190	1-216-864-11	METAL CHIP	0	5%	1/16W
R202	1-216-833-11	METAL CHIP	10K	5%	1/16W
R203	1-216-814-11	METAL CHIP	270	5%	1/16W
R205	1-216-835-11	METAL CHIP	15K	5%	1/16W
R206	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R208	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R210	1-216-809-11	METAL CHIP	100	5%	1/16W
R211	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R212	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R214	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R215	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R216	1-216-811-11	METAL CHIP	150	5%	1/16W
R217	1-216-864-11	METAL CHIP	0	5%	1/16W
R218	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
	(TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
R219	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
	(TR315/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
R220	1-216-815-11	METAL CHIP	330	5%	1/16W
	(TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
R222	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
	(TR416/TR416PK/TR516/TR516PK/TR716)				
R223	1-216-821-11	METAL CHIP	1K	5%	1/16W
R224	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R225	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
	(TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
R226	1-216-820-11	METAL CHIP	820	5%	1/16W
R227	1-216-811-11	METAL CHIP	150	5%	1/16W
R228	1-216-813-11	METAL CHIP	220	5%	1/16W
R229	1-216-805-11	METAL CHIP	47	5%	1/16W
R230	1-216-812-11	METAL CHIP	180	5%	1/16W
R231	1-216-812-11	METAL CHIP	180	5%	1/16W
R232	1-216-815-11	METAL CHIP	330	5%	1/16W
	(TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
R233	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R234	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R235	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R236	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R237	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R238	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R239	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R240	1-216-857-11	METAL CHIP	1M	5%	1/16W
R241	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R242	1-216-845-11	METAL CHIP	100K	5%	1/16W
R243	1-216-845-11	METAL CHIP	100K	5%	1/16W
R244	1-216-845-11	METAL CHIP	100K	5%	1/16W
R245	1-216-840-11	METAL CHIP	39K	5%	1/16W
R246	1-216-835-11	METAL CHIP	15K	5%	1/16W
R247	1-216-817-11	METAL CHIP	470	5%	1/16W
R248	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R249	1-216-833-11	METAL CHIP	10K	5%	1/16W
R251	1-216-833-11	METAL CHIP	10K	5%	1/16W
R252	1-216-821-11	METAL CHIP	1K	5%	1/16W
R253	1-216-845-11	METAL CHIP	100K	5%	1/16W
R254	1-216-864-11	METAL CHIP	0	5%	1/16W
R255	1-216-833-11	METAL CHIP	10K	5%	1/16W
R257	1-216-295-91	SHORT	0		
R258	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R259	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R260	1-216-295-91	SHORT	0		
R261	1-216-295-91	SHORT	0		
R262	1-216-295-91	SHORT	0		
R263	1-216-295-91	SHORT	0		
R264	1-216-295-91	SHORT	0		
R265	1-216-864-11	METAL CHIP	0	5%	1/16W
R266	1-216-864-11	METAL CHIP	0	5%	1/16W
R267	1-216-864-11	METAL CHIP	0	5%	1/16W
R303	1-216-817-11	METAL CHIP	470	5%	1/16W
R304	1-216-817-11	METAL CHIP	470	5%	1/16W
R313	1-216-864-11	METAL CHIP	0	5%	1/16W
	(TR315/TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK)				
R314	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R317	1-216-845-11	METAL CHIP	100K	5%	1/16W
R318	1-216-845-11	METAL CHIP	100K	5%	1/16W
R321	1-216-843-11	METAL CHIP	68K	5%	1/16W
R322	1-216-845-11	METAL CHIP	100K	5%	1/16W
R323	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R325	1-218-903-11	RES,CHIP	220K	0.50%	1/16W
R331	1-216-820-11	METAL CHIP	820	5%	1/16W
R371	1-216-821-11	METAL CHIP	1K	5%	1/16W
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
R374	1-216-809-11	METAL CHIP	100	5%	1/16W
R375	1-216-834-11	METAL CHIP	12K	5%	1/16W
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
R376	1-216-834-11	METAL CHIP	12K	5%	1/16W
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				

Ref. No.	Part No.	Description			Remark
R377	1-216-834-11	METAL CHIP	12K	5%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R378	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R379	1-216-852-11	METAL CHIP	390K	5%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R382	1-216-837-11	METAL CHIP	22K	5%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R383	1-216-837-11	METAL CHIP	22K	5%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R384	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R385	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R386	1-216-849-11	METAL CHIP	220K	5%	1/16W
		(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)			
R388	1-216-864-11	METAL CHIP	0	5%	1/16W
		(TR315/TR416/TR416PK/TR516/TR516PK/TR716)			
R389	1-216-864-11	METAL CHIP	0	5%	1/16W
		(TR315/TR416/TR416PK/TR516/TR516PK/TR716)			
R402	1-216-821-11	METAL CHIP	1K	5%	1/16W
R403	1-216-845-11	METAL CHIP	100K	5%	1/16W
R404	1-216-845-11	METAL CHIP	100K	5%	1/16W
R405	1-216-845-11	METAL CHIP	100K	5%	1/16W
R406	1-216-845-11	METAL CHIP	100K	5%	1/16W
R407	1-216-845-11	METAL CHIP	100K	5%	1/16W
R409	1-216-845-11	METAL CHIP	100K	5%	1/16W
R410	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R412	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R414	1-216-864-11	METAL CHIP	0	5%	1/16W
R415	1-216-821-11	METAL CHIP	1K	5%	1/16W
R417	1-216-821-11	METAL CHIP	1K	5%	1/16W
R419	1-216-839-11	METAL CHIP	33K	5%	1/16W
R420	1-216-833-11	METAL CHIP	10K	5%	1/16W
R421	1-216-833-11	METAL CHIP	10K	5%	1/16W
R424	1-216-841-11	METAL CHIP	47K	5%	1/16W
R425	1-216-853-11	METAL CHIP	470K	5%	1/16W
R426	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R427	1-216-841-11	METAL CHIP	47K	5%	1/16W
R428	1-216-841-11	METAL CHIP	47K	5%	1/16W
R429	1-216-811-11	METAL CHIP	150	5%	1/16W
R430	1-216-813-11	METAL CHIP	220	5%	1/16W
R431	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R432	1-216-845-11	METAL CHIP	100K	5%	1/16W
R433	1-216-845-11	METAL CHIP	100K	5%	1/16W
R434	1-216-853-11	METAL CHIP	470K	5%	1/16W
R435	1-216-853-11	METAL CHIP	470K	5%	1/16W
R440	1-216-841-11	METAL CHIP	47K	5%	1/16W
R441	1-216-845-11	METAL CHIP	100K	5%	1/16W
R442	1-216-845-11	METAL CHIP	100K	5%	1/16W
R443	1-216-295-91	SHORT	0		
R452	1-217-671-11	METAL CHIP	1	5%	1/10W
R453	1-217-671-11	METAL CHIP	1	5%	1/10W
R454	1-217-671-11	METAL CHIP	1	5%	1/10W
R455	1-216-833-11	METAL CHIP	10K	5%	1/16W
R456	1-216-833-11	METAL CHIP	10K	5%	1/16W
R457	1-216-833-11	METAL CHIP	10K	5%	1/16W
R457	1-216-833-11	METAL CHIP	10K	5%	1/16W
		(TR716/TRV43/TRV46/TRV46PK)			
R458	1-216-808-11	METAL CHIP	82	5%	1/16W
R459	1-216-864-11	METAL CHIP	0	5%	1/16W
R460	1-216-864-11	METAL CHIP	0	5%	1/16W
R461	1-216-853-11	METAL CHIP	470K	5%	1/16W
R462	1-216-853-11	METAL CHIP	470K	5%	1/16W
R463	1-216-853-11	METAL CHIP	470K	5%	1/16W
R464	1-216-851-11	METAL CHIP	330K	5%	1/16W
R465	1-216-845-11	METAL CHIP	100K	5%	1/16W
R466	1-216-841-11	METAL CHIP	47K	5%	1/16W
R467	1-216-833-11	METAL CHIP	10K	5%	1/16W
R468	1-216-833-11	METAL CHIP	10K	5%	1/16W
R469	1-216-841-11	METAL CHIP	47K	5%	1/16W
R470	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R471	1-216-833-11	METAL CHIP	10K	5%	1/16W
R472	1-216-833-11	METAL CHIP	10K	5%	1/16W
R473	1-216-841-11	METAL CHIP	47K	5%	1/16W
R474	1-216-817-11	METAL CHIP	470	5%	1/16W
R475	1-216-838-11	METAL CHIP	27K	5%	1/16W
R476	1-216-817-11	METAL CHIP	470	5%	1/16W
R477	1-216-864-11	METAL CHIP	0	5%	1/16W
R479	1-216-864-11	METAL CHIP	0	5%	1/16W
R480	1-216-864-11	METAL CHIP	0	5%	1/16W
R481	1-216-864-11	METAL CHIP	0	5%	1/16W
R482	1-216-833-11	METAL CHIP	10K	5%	1/16W
R483	1-216-836-11	METAL CHIP	18K	5%	1/16W
R484	1-217-671-11	METAL CHIP	1	5%	1/10W
R485	1-217-671-11	METAL CHIP	1	5%	1/10W
R486	1-216-845-11	METAL CHIP	100K	5%	1/16W
R487	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R488	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R490	1-216-023-00	METAL CHIP	82	5%	1/10W
R502	1-216-798-11	RES,CHIP	12	5%	1/16W
R503	1-216-798-11	RES,CHIP	12	5%	1/16W
R504	1-216-845-11	METAL CHIP	100K	5%	1/16W
R506	1-216-857-11	METAL CHIP	1M	5%	1/16W
R508	1-216-809-11	METAL CHIP	100	5%	1/16W
R509	1-216-864-11	METAL CHIP	0	5%	1/16W
R510	1-216-809-11	METAL CHIP	100	5%	1/16W
R511	1-216-809-11	METAL CHIP	100	5%	1/16W
R512	1-216-853-11	METAL CHIP	470K	5%	1/16W
R513	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R514	1-216-821-11	METAL CHIP	1K	5%	1/16W
R515	1-216-864-11	METAL CHIP	0	5%	1/16W
R522	1-216-864-11	METAL CHIP	0	5%	1/16W
R525	1-216-864-11	METAL CHIP	0	5%	1/16W
R526	1-216-864-11	METAL CHIP	0	5%	1/16W
R529	1-216-864-11	METAL CHIP	0	5%	1/16W
R533	1-216-864-11	METAL CHIP	0	5%	1/16W
R534	1-216-864-11	METAL CHIP	0	5%	1/16W
R535	1-216-864-11	METAL CHIP	0	5%	1/16W
R536	1-216-864-11	METAL CHIP	0	5%	1/16W
R537	1-216-296-91	SHORT	0		
R551	1-216-841-11	METAL CHIP	47K	5%	1/16W
R554	1-216-843-11	METAL CHIP	68K	5%	1/16W
R555	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R556	1-216-001-00	METAL CHIP	10	5%	1/10W
R557	1-216-843-11	METAL CHIP	68K	5%	1/16W
R558	1-216-295-91	SHORT	0		
R560	1-216-821-11	METAL CHIP	1K	5%	1/16W
R561	1-216-853-11	METAL CHIP	470K	5%	1/16W
R562	1-216-849-11	METAL CHIP	220K	5%	1/16W
R563	1-216-853-11	METAL CHIP	470K	5%	1/16W
R564	1-216-853-11	METAL CHIP	470K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R565	1-216-833-11	METAL CHIP	10K	5%	1/16W
R566	1-216-835-11	METAL CHIP	15K	5%	1/16W
R567	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R569	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R570	1-216-841-11	METAL CHIP	47K	5%	1/16W
R571	1-216-837-11	METAL CHIP	22K	5%	1/16W
R572	1-216-845-11	METAL CHIP	100K	5%	1/16W
R573	1-216-815-11	METAL CHIP	330	5%	1/16W
R574	1-216-821-11	METAL CHIP	1K	5%	1/16W
R575	1-216-821-11	METAL CHIP	1K	5%	1/16W
R576	1-216-821-11	METAL CHIP	1K	5%	1/16W
R577	1-216-833-11	METAL CHIP	10K	5%	1/16W
R579	1-216-821-11	METAL CHIP	1K	5%	1/16W
R582	1-216-864-11	METAL CHIP	0	5%	1/16W
R583	1-216-295-91	SHORT	0		
R584	1-216-295-91	SHORT	0		
R603	1-216-845-11	METAL CHIP	100K	5%	1/16W
R604	1-216-813-11	METAL CHIP	220	5%	1/16W
R605	1-216-841-11	METAL CHIP	47K	5%	1/16W
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
R606	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
					(TRV43/TRV46/TRV46PK)
R608	1-216-845-11	METAL CHIP	100K	5%	1/16W
R610	1-216-821-11	METAL CHIP	1K	5%	1/16W
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
R611	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
					(TRV43/TRV46/TRV46PK)
R612	1-216-853-11	METAL CHIP	470K	5%	1/16W
R613	1-216-821-11	METAL CHIP	1K	5%	1/16W
	(TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
R614	1-216-821-11	METAL CHIP	1K	5%	1/16W
					(TRV43/TRV46/TRV46PK)
R618	1-216-853-11	METAL CHIP	470K	5%	1/16W
R619	1-216-853-11	METAL CHIP	470K	5%	1/16W
R620	1-216-853-11	METAL CHIP	470K	5%	1/16W
R621	1-216-853-11	METAL CHIP	470K	5%	1/16W
R622	1-216-853-11	METAL CHIP	470K	5%	1/16W
R624	1-216-853-11	METAL CHIP	470K	5%	1/16W
R625	1-216-845-11	METAL CHIP	100K	5%	1/16W
R627	1-216-853-11	METAL CHIP	470K	5%	1/16W
R628	1-216-841-11	METAL CHIP	47K	5%	1/16W
R629	1-216-833-11	METAL CHIP	10K	5%	1/16W
R630	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R631	1-216-845-11	METAL CHIP	100K	5%	1/16W
R632	1-216-857-11	METAL CHIP	1M	5%	1/16W
R633	1-216-853-11	METAL CHIP	470K	5%	1/16W
R634	1-216-853-11	METAL CHIP	470K	5%	1/16W
R635	1-216-857-11	METAL CHIP	1M	5%	1/16W
R636	1-216-857-11	METAL CHIP	1M	5%	1/16W
R637	1-216-845-11	METAL CHIP	100K	5%	1/16W
R638	1-216-845-11	METAL CHIP	100K	5%	1/16W
R639	1-216-845-11	METAL CHIP	100K	5%	1/16W
R640	1-216-845-11	METAL CHIP	100K	5%	1/16W
R641	1-216-845-11	METAL CHIP	100K	5%	1/16W
R642	1-216-821-11	METAL CHIP	1K	5%	1/16W
R643	1-216-857-11	METAL CHIP	1M	5%	1/16W
R644	1-216-841-11	METAL CHIP	47K	5%	1/16W
R645	1-216-845-11	METAL CHIP	100K	5%	1/16W
R646	1-216-853-11	METAL CHIP	470K	5%	1/16W
R647	1-216-853-11	METAL CHIP	470K	5%	1/16W
R648	1-216-853-11	METAL CHIP	470K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R649	1-216-857-11	METAL CHIP	1M	5%	1/16W
R650	1-219-570-11	RES,CHIP	10M	5%	1/16W
R651	1-216-845-11	METAL CHIP	100K	5%	1/16W
R652	1-216-853-11	METAL CHIP	470K	5%	1/16W
R653	1-216-853-11	METAL CHIP	470K	5%	1/16W
R654	1-216-817-11	METAL CHIP	470	5%	1/16W
R655	1-216-853-11	METAL CHIP	470K	5%	1/16W
R666	1-216-821-11	METAL CHIP	1K	5%	1/16W
R667	1-216-821-11	METAL CHIP	1K	5%	1/16W
R668	1-216-821-11	METAL CHIP	1K	5%	1/16W
R669	1-216-821-11	METAL CHIP	1K	5%	1/16W
R670	1-216-821-11	METAL CHIP	1K	5%	1/16W
R671	1-216-821-11	METAL CHIP	1K	5%	1/16W
R672	1-216-821-11	METAL CHIP	1K	5%	1/16W
R673	1-216-821-11	METAL CHIP	1K	5%	1/16W
R675	1-216-821-11	METAL CHIP	1K	5%	1/16W
R676	1-216-821-11	METAL CHIP	1K	5%	1/16W
R677	1-216-821-11	METAL CHIP	1K	5%	1/16W
R678	1-216-821-11	METAL CHIP	1K	5%	1/16W
R679	1-216-821-11	METAL CHIP	1K	5%	1/16W
R680	1-216-845-11	METAL CHIP	100K	5%	1/16W
R681	1-216-821-11	METAL CHIP	1K	5%	1/16W
R682	1-216-821-11	METAL CHIP	1K	5%	1/16W
R683	1-216-821-11	METAL CHIP	1K	5%	1/16W
R684	1-216-821-11	METAL CHIP	1K	5%	1/16W
R685	1-216-821-11	METAL CHIP	1K	5%	1/16W
R686	1-216-821-11	METAL CHIP	1K	5%	1/16W
R687	1-216-821-11	METAL CHIP	1K	5%	1/16W
R689	1-216-864-11	METAL CHIP	0	5%	1/16W
R691	1-216-845-11	METAL CHIP	100K	5%	1/16W
R692	1-216-853-11	METAL CHIP	470K	5%	1/16W
R693	1-216-821-11	METAL CHIP	1K	5%	1/16W
R695	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
		(TR315/TR416/TR416PK/TR516/TR516PK/TR716)			
R697	1-216-854-11	METAL CHIP	560K	5%	1/16W
R726	1-216-864-11	METAL CHIP	0	5%	1/16W
R752	1-216-841-11	METAL CHIP	47K	5%	1/16W
					(TRV43/TRV46/TRV46PK)
R753	1-216-841-11	METAL CHIP	47K	5%	1/16W
					(TRV43/TRV46/TRV46PK)
R755	1-216-837-11	METAL CHIP	22K	5%	1/16W
					(TRV43/TRV46/TRV46PK)
R756	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
					(TRV43/TRV46/TRV46PK)
R757	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
					(TRV43/TRV46/TRV46PK)
R758	1-216-833-11	METAL CHIP	10K	5%	1/16W
					(TRV43/TRV46/TRV46PK)
R759	1-216-833-11	METAL CHIP	10K	5%	1/16W
					(TRV43/TRV46/TRV46PK)
R760	1-216-835-11	METAL CHIP	15K	5%	1/16W
					(TRV43/TRV46/TRV46PK)
R761	1-216-857-11	METAL CHIP	1M	5%	1/16W
					(TRV43/TRV46/TRV46PK)
R763	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
					(TRV43/TRV46/TRV46PK)
R764	1-216-815-11	METAL CHIP	330	5%	1/16W
					(TRV43/TRV46/TRV46PK)
R765	1-216-821-11	METAL CHIP	1K	5%	1/16W
					(TRV43/TRV46/TRV46PK)
R767	1-216-817-11	METAL CHIP	470	5%	1/16W
					(TRV43/TRV46/TRV46PK)

Ref. No.	Part No.	Description			Remark
R768	1-216-847-11	METAL CHIP	150K	5%	1/16W (TRV43/TRV46/TRV46PK)
R770	1-216-847-11	METAL CHIP	150K	5%	1/16W (TRV43/TRV46/TRV46PK)
R771	1-216-818-11	METAL CHIP	560	5%	1/16W (TRV43/TRV46/TRV46PK)
R772	1-216-831-11	METAL CHIP	6.8K	5%	1/16W (TRV43/TRV46/TRV46PK)
R773	1-216-817-11	METAL CHIP	470	5%	1/16W (TRV43/TRV46/TRV46PK)
R774	1-216-840-11	METAL CHIP	39K	5%	1/16W (TRV43/TRV46/TRV46PK)
R775	1-216-864-11	METAL CHIP	0	5%	1/16W (TR315/TR416/TR416PK/TR516/TR516PK/TR716/TRV16/TRV16PK/TRV36/TRV36PK)
R916	1-216-864-11	METAL CHIP	0	5%	1/16W (TR315/TR416/TR416PK/TR516/TR516PK/TR716)
R916	1-216-864-11	METAL CHIP	0	5%	1/16W (TR416/TR416PK/TR516/TR516PK/TR716)
R917	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR315/TR416/TR416PK/TR516/TR516PK/TR716)
R917	1-216-841-11	METAL CHIP	47K	5%	1/16W (TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R918	1-216-845-11	METAL CHIP	100K	5%	1/16W
R919	1-216-833-11	METAL CHIP	10K	5%	1/16W (TRV36/TRV36PK)
R919	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR416/TR416PK/TRV43/TRV46/TRV46PK)
R919	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR516/TR516PK)
R919	1-216-842-11	METAL CHIP	56K	5%	1/16W (TR716)
R919	1-216-843-11	METAL CHIP	68K	5%	1/16W (TR315/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R919	1-216-845-11	METAL CHIP	100K	5%	1/16W (TRV16/TRV16PK)
R920	1-216-833-11	METAL CHIP	10K	5%	1/16W (TRV16/TRV16PK)
R920	1-216-842-11	METAL CHIP	56K	5%	1/16W (TR315)
R920	1-216-843-11	METAL CHIP	68K	5%	1/16W (TR716)
R920	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR416/TR416PK/TR516/TR516PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R921	1-216-800-11	RES,CHIP	18	5%	1/16W (TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
R922	1-217-671-11	METAL CHIP	1	5%	1/10W
R923	1-217-671-11	METAL CHIP	1	5%	1/10W
R924	1-216-821-11	METAL CHIP	1K	5%	1/16W
R925	1-216-821-11	METAL CHIP	1K	5%	1/16W
R928	1-216-821-11	METAL CHIP	1K	5%	1/16W
R929	1-216-864-11	METAL CHIP	0	5%	1/16W
		< TRANSFORMER >			
T902	1-431-915-11	TRANSFORMER ASSY, FLYBACK (M)			(TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
		< VIBRATOR >			
X401	1-760-655-41	VIBRATOR, CRYSTAL (20MHz)			
X501	1-760-320-11	VIBRATOR, CRYSTAL (28.6363MHz)			
X601	1-760-458-21	VIBRATOR, CERAMIC (20MHz)			
X602	1-760-458-21	VIBRATOR, CRYSTAL (32.768kHz)			

Ref. No.	Part No.	Description				Remark
	A-7066-792-A	VF-99 (YM)(YS)(VHL4) BOARD, COMPLETE				
		**************************************				
		(TR315/TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK) (Ref.No. 10,000 Series)				
		< CAPACITOR >				
C901	1-107-854-11	TANTAL. CHIP	68uF	20%	6.3V	
C902	1-163-038-91	CERAMIC CHIP	0.1uF		25V	
C903	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V	
C904	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V	
C905	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V	
C906	1-162-638-11	CERAMIC CHIP	1uF		16V	
C907	1-104-563-11	FILM CHIP	0.1uF	5%	16V	
C908	1-162-920-11	CERAMIC CHIP	27PF	5%	50V	
C909	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
⚠C910	1-163-017-91	CERAMIC CHIP	4700PF	5%	50V	
⚠C911	1-163-019-91	CERAMIC CHIP	6800PF	10%	50V	
C912	1-107-854-11	TANTAL. CHIP	68uF	20%	6.3V	
C913	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V	
C914	1-113-984-11	TANTAL. CHIP	1.5uF	20%	35V	
C915	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	
C916	1-164-611-11	CERAMIC CHIP	0.001uF	10%	500V	
		< CONNECTOR >				
CN901	1-573-506-41	CONNECTOR, FPC (NON ZIF) 4P				
* CN902	1-580-057-11	PIN, CONNECTOR 4P				
		< DIODE >				
D901	8-719-951-21	DIODE PR1102W-TR				
D903	8-719-404-50	DIODE MA111-TX				
D905	8-719-073-03	DIODE MA8082-TX				
		< IC >				
IC901	8-759-196-14	IC BA7149F-E2				
		< COIL >				
L901	1-412-031-11	INDUCTOR CHIP 47uH				
L902	1-410-387-11	INDUCTOR CHIP 33uH				
⚠L903	1-411-697-11	COIL, FERRITE (HLC)				
		< TRANSISTOR >				
Q901	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX				
Q902	8-729-106-68	TRANSISTOR 2SD1615-T1GLGK				
Q903	8-729-216-31	TRANSISTOR 2SA1163G-TE85L				
Q904	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX				
		< RESISTOR >				
R901	1-216-817-11	METAL CHIP	470	5%	1/16W	
R902	1-216-817-11	METAL CHIP	470	5%	1/16W	
R903	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R904	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R905	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R906	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	(TR315/TRV16/TRV16PK/TRV36/TRV43/TRV46/TRV46PK)
R906	1-216-813-11	METAL CHIP	220	5%	1/16W	(TR315/TRV16/TRV16PK/TRV36/TRV43/TRV46/TRV46PK)
R907	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R908	1-216-852-11	METAL CHIP	390K	5%	1/16W	
R909	1-216-833-11	METAL CHIP	10K	5%	1/16W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une

Ref. No.	Part No.	Description			Remark
R910	1-216-835-11	METAL CHIP	15K	5%	1/16W
R911	1-216-160-00	RES,CHIP	27	5%	1/8W
R912	1-216-857-11	METAL CHIP	1M	5%	1/16W
R916	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R917	1-218-891-11	RES,CHIP	68K	0.50%	1/16W
R918	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R919	1-216-843-11	METAL CHIP	68K	5%	1/16W
R920	1-216-837-11	METAL CHIP	22K	5%	1/16W
R921	1-216-800-11	RES,CHIP	18	5%	1/16W
		(TR315/TRV16/TRV16PK/TRV36/TRV43/TRV46/TRV46PK)			
R921	1-216-795-11	RES,CHIP	6.8	5%	1/16W
		(TR315/TRV16/TRV16PK/TRV36/TRV43/TRV46/TRV46PK)			
R922	1-216-847-11	METAL CHIP	150K	5%	1/16W
R923	1-216-857-11	METAL CHIP	1M	5%	1/16W
R924	1-216-862-11	RES,CHIP	2.7M	5%	1/16W
R925	1-216-862-11	RES,CHIP	2.7M	5%	1/16W
R926	1-216-821-11	METAL CHIP	1K	5%	1/16W
R927	1-216-821-11	METAL CHIP	1K	5%	1/16W
R928	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R929	1-216-818-11	METAL CHIP	560	5%	1/16W
R930	1-216-791-11	METAL CHIP	3.3	5%	1/16W
R931	1-217-671-11	METAL CHIP	1	5%	1/10W
R932	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
		< VARIABLE RESISTOR >			
RV903	1-238-852-11	RES, ADJ, CERMET 470			
RV904	1-238-862-11	RES, ADJ, CERMET 1M			
		< TRANSFORMER >			
⚠T901	1-453-124-12	TRANSFORMER ASSY, FLYBACK (TYPE 3)			
⚠T902	1-431-915-11	TRANSFORMER ASSY, FLYBACK (M) (TYPE 2)			
		< FLEXIBLE BOARD >			
⚠W901	1-540-019-42	SOCKET ASSY, CRT			

Ref. No.	Part No.	Description			Remark
	A-7073-437-A	VF-119 BOARD, COMPLETE			
		**********************			
		(TR416/TR416PK/TR516/TR516PK/TR716)			
		< CAPACITOR >			
C5401	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C5402	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5403	1-135-179-21	TANTAL. CHIP	2.2uF	20%	16V
C5404	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5405	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5406	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5407	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C5408	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C5409	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C5410	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5411	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C5413	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V
C5414	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5415	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C5416	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C5417	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5418	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C5419	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C5420	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C5421	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C5422	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C5423	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5424	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C5427	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C5429	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
		< CONNECTOR >			
CN5401	1-766-350-21	CONNECTOR, FFC/FPC 20P			
CN5402	1-691-380-21	CONNECTOR, FFC/FPC 16P			
		< DIODE >			
D5401	8-713-102-80	DIODE 1T369-01-T8A			
D5402	8-719-062-16	DIODE 01ZA8.2(TPL3)			
		< FERRITE BEAD >			
FB5405	1-500-238-22	FERRITE 0UH			
		< IC >			
IC5401	8-759-498-53	IC CXA8115R-T4			
IC5402	8-759-364-05	IC M62376GP-65AD			
IC5404	8-752-392-33	IC CXD2458AR-T4			
		< COIL >			
L5401	1-414-754-11	INDUCTOR	10uH		
L5402	1-414-754-11	INDUCTOR	10uH		
L5403	1-412-959-11	INDUCTOR	47uH		
L5404	1-412-949-21	INDUCTOR	6.8uH		
		< RESISTOR >			
R5401	1-216-864-11	METAL CHIP	0	5%	1/16W
R5403	1-216-864-11	METAL CHIP	0	5%	1/16W
R5405	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5408	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5409	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5415	1-216-864-11	METAL CHIP	0	5%	1/16W
R5416	1-216-864-11	METAL CHIP	0	5%	1/16W
R5417	1-216-864-11	METAL CHIP	0	5%	1/16W
R5420	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5421	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5422	1-216-840-11	METAL CHIP	39K	5%	1/16W
R5423	1-216-853-11	METAL CHIP	470K	5%	1/16W
R5424	1-216-840-11	METAL CHIP	39K	5%	1/16W
R5425	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5426	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5427	1-216-840-11	METAL CHIP	39K	5%	1/16W
R5428	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5429	1-216-864-11	METAL CHIP	0	5%	1/16W
R5431	1-216-809-11	METAL CHIP	100	5%	1/16W
R5432	1-216-809-11	METAL CHIP	100	5%	1/16W
R5435	1-216-809-11	METAL CHIP	100	5%	1/16W
R5437	1-216-864-11	METAL CHIP	0	5%	1/16W
R5439	1-216-864-11	METAL CHIP	0	5%	1/16W
R5440	1-218-905-11	RES,CHIP	270K	0.50%	1/16W
R5441	1-218-873-11	RES,CHIP	12K	0.50%	1/16W
R5444	1-216-840-11	METAL CHIP	39K	5%	1/16W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
R5446	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5447	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5448	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5449	1-216-864-11	METAL CHIP	0	5%	1/16W
R5452	1-216-821-11	METAL CHIP	1K	5%	1/16W
R5458	1-216-864-11	METAL CHIP	0	5%	1/16W
R5460	1-216-864-11	METAL CHIP	0	5%	1/16W
R5471	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5473	1-216-864-11	METAL CHIP	0	5%	1/16W
R5476	1-216-864-11	METAL CHIP	0	5%	1/16W

A-7073-438-A VF-120 BOARD, COMPLETE
****
(TR416/TR416PK/TR516/TR516PK/TR716)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C5302	1-104-916-11	TANTAL. CHIP	6.8uF	20%	20V
C5303	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C5304	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5305	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C5306	1-164-676-11	CERAMIC CHIP	2200PF	5%	16V
C5307	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C5308	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C5309	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5310	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C5311	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5312	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C5313	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C5314	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

< CONNECTOR >

Ref. No.	Part No.	Description
CN5301	1-691-346-11	CONNECTOR, FFC/FPC (ZIF) 8P
CN5302	1-691-513-11	CONNECTOR, BOARD TO BOARD 12P

< DIODE >

Ref. No.	Part No.	Description
D5301	8-719-043-70	DIODE MA6S121-(TX)
D5302	8-719-056-49	DIODE 1SS370(TE85L)

< IC >

Ref. No.	Part No.	Description
IC5301	8-759-097-75	IC MB3789PFV-G-BND-ER

< COIL >

Ref. No.	Part No.	Description
L5301	1-412-031-11	INDUCTOR CHIP 47uH

< TRANSISTOR >

Ref. No.	Part No.	Description
Q5301	8-729-028-81	TRANSISTOR RN2305-TE85L
Q5304	8-729-403-35	TRANSISTOR UN5113-TX
Q5305	8-729-402-42	TRANSISTOR UN5213-TX

< RESISTOR >

Ref. No.	Part No.	Description			Remark
R5301	1-216-809-11	METAL CHIP	100	5%	1/16W
R5304	1-218-901-11	RES,CHIP	180K	0.50%	1/16W
R5305	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R5306	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5307	1-216-838-11	METAL CHIP	27K	5%	1/16W
R5308	1-216-847-11	METAL CHIP	150K	5%	1/16W
R5309	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5310	1-216-842-11	METAL CHIP	56K	5%	1/16W
R5311	1-216-850-11	METAL CHIP	270K	5%	1/16W
R5312	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5313	1-216-842-11	METAL CHIP	56K	5%	1/16W
R5314	1-216-850-11	METAL CHIP	270K	5%	1/16W
R5315	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5316	1-216-851-11	METAL CHIP	330K	5%	1/16W
R5317	1-216-848-11	METAL CHIP	180K	5%	1/16W
R5318	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R5321	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5322	1-216-853-11	METAL CHIP	470K	5%	1/16W
R5324	1-216-864-11	METAL CHIP	0	5%	1/16W

A-7073-787-A VL-21 BOARD, COMPLETE
****
(TR516/TR516PK/TR716)
(Ref.No. 2,000 Series)

A-7073-808-A VL-22 BOARD, COMPLETE
****
(TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
(Ref.No. 3,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C151	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
	(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
C153	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
	(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				

< CONNECTOR >

Ref. No.	Part No.	Description
CN151	1-764-703-11	CONNECTOR, FFC/FPC (LIF) 4P
		(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)

< COIL >

Ref. No.	Part No.	Description
L151	1-416-344-11	INDUCTOR 10uH
		(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)

< TRANSISTOR >

Ref. No.	Part No.	Description
Q151	8-729-043-94	TRANSISTOR CPH3106-PM-TL
		(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)
Q152	8-729-028-26	TRANSISTOR 2SK1829(TE85L)
		(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)

< RESISTOR >

Ref. No.	Part No.	Description			Remark
R151	1-216-864-11	METAL CHIP	0	5%	1/16W
	(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
R152	1-216-813-11	METAL CHIP	220	5%	1/16W
	(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
R153	1-216-821-11	METAL CHIP	1K	5%	1/16W
	(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				
R154	1-216-845-11	METAL CHIP	100K	5%	1/16W
	(TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)				

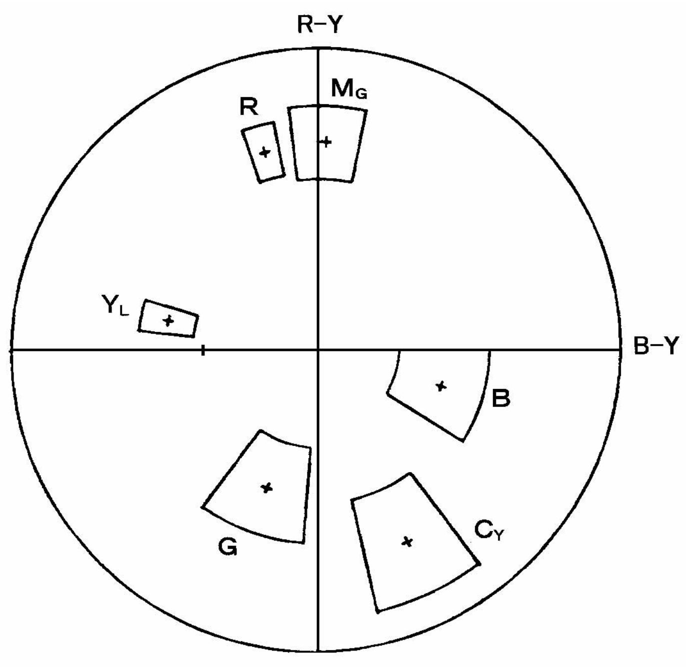
Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS *************	
67	1-475-619-11	SWITCH BLOCK, CONTROL (SS-8500)	
73	1-475-617-11	SWITCH BLOCK, CONTROL (FK-8500) (TR series/TRV16/TRV16PK/TRV36/TRV36PK)	
73	1-475-617-21	SWITCH BLOCK, CONTROL (FK-8500) (TRV43/TRV46/TRV46PK)	
151	1-475-620-11	SWITCH BLOCK, CONTROL (MF-8500)	
157	1-790-334-11	CABLE, FLEXIBLE FLAT (FFC-257F)	
209	1-668-957-11	FP-621 FLEXIBLE BOARD	
210	1-672-454-11	FP-58 FLEXIBLE BOARD (for Video light models)	
211	1-672-453-11	FP-56 FLEXIBLE BOARD	
212	1-668-956-11	FP-620 FLEXIBLE BOARD (TR716/TRV series)	
254	1-672-455-11	FP-57 FLEXIBLE BOARD (for Color view finder models)	
308	1-783-241-11	CABLE, FLEXIBLE FLAT (FFC-235) (for B/W view finder models)	
358	1-668-963-21	FP-642 FLEXIBLE BOARD (for TRV series)	
359	1-959-271-11	HARNESS (PD-108) (for TRV series)	
401	8-848-722-01	DEVICE, LENS (LSV-600A) (SOC)	
409	1-758-133-21	FILTER BLOCK, OPTICAL	
412	1-668-959-11	FP-623 FLEXIBLE BOARD	
760	1-658-213-11	FP-355 FLEXIBLE BOARD	
762	1-657-786-13	FP-221 FLEXIBLE BOARD	
764	1-658-214-11	FP-356 FLEXIBLE BOARD	
803	1-657-785-11	FP-248 FLEXIBLE BOARD (DEW SENSOR)	
817	1-657-784-11	FP-220 FLEXIBLE BOARD	
D001	8-719-988-42	DIODE GL453	
IC401	A-7030-960-A	CCD BLOCK ASSY (206 Service) (TR315/TR416/TR416PK/TR516/TR516PK/TRV16/TRV16PK/TRV36/TRV36PK)	
IC401	A-7030-961-A	CCD BLOCK ASSY (207 Service) (TR716/TRV43/TRV46/TRV46PK)	
J001	1-565-276-31	JACK, ULTRA SMALL 1P (LANC)	
J901	1-694-384-11	TERMINAL BOARD, BATTERY	
LCD901	1-803-355-21	MODULE, CRYSTAL INDICATION	
LCD902	8-753-023-37	LCX024AK-4/5 COMPLE (for Color view finder models)	
LCD903	A-7093-473-A	INDICATION LCD BLOCK ASSY	
M901	A-7048-870-A	DRUM ASSY (DGH-0E3A-R)	
M902	8-835-531-32	CAPSTAN ASSY	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
M905	1-763-047-11	MOTOR, FOCUS STEPPING	
M906	1-763-046-11	MOTOR, ZOOM STEPPING	
MIC901	1-542-312-11	MICROPHONE	
⚠ND801	1-517-752-11	TUBE, FLUORESCENT, COLD CATHODE (for TRV series)	
⚠ND5351	1-517-325-21	LAMP, FLUORESCENT (0.55 INCH) (for Color view finder models)	
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (Hi8 MP, ME/MP, REC PROOF)	
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C.C. LOCK)	
S003	1-572-688-11	SWITCH, PUSH (1 KEY) (EJECT)	
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	
SE451	1-803-041-11	SENSOR, ANGULAR VELOCITY (YAW) (TR716/TRV43/TRV46/TRV46PK)	
SE452	1-803-041-21	SENSOR, ANGULAR VELOCITY (PITCH) (TR716/TRV43/TRV46/TRV46PK)	
SP901	1-504-753-41	SPEAKER (2.8 CM) (for TRV series)	
⚠VL901	1-517-760-11	LIGHT, VIDEO (for Video light models)	
⚠V901	1-452-673-61	CRT ASSY (M01KXX90WB) (for B/W view finder models)	

Ref. No.	Part No.	Description	Remark
		ACCESSORIES ************	
	1-467-574-21	REMOTE COMMANDER (RMT-708) (TR516/TR516PK/TR716/TRV36/TRV36PK/TRV43/TRV46/TRV46PK)	
⚠	1-475-599-11	ADAPTOR, AC (AC-L10)	
⚠	1-569-008-21	ADAPTOR, CONVERSION 2P (TR315/TR416:BR/TR416PK/TR516PK/TRV16:E,BR,HK,TW/TRV16PK/TRV36PK/TRV46:E,HK/TRV46PK)	
	1-696-862-21	CORD, CONNECTION (A/V CONNECTING CABLE (Monaural) 1.5M)	
⚠	1-575-131-11	CORD, POWER (TR315/TR416:BR/TR416PK/TR516PK/TRV16:E,BR,TW/TRV16PK/TRV36PK/TRV46:E/TRV46PK)	
⚠	1-783-374-11	CORD, POWER (TRV16:HK/TRV36:HK/TRV46:HK)	
⚠	1-790-107-22	CORD, POWER (TR416:US,CND/TR516/TR716/TRV16:US,CND/TRV36/TRV43/TRV46:US,CND)	
	3-054-045-01	VIDEO, HOW TO TAKE (TR516:US/TR716:US/TRV16:US/TRV36:US/TRV46:US)	
	3-865-332-11	MANUAL, INSTRUCTION (English) (TR416:US,CND/TR516/TR716)	
	3-865-332-21	MANUAL, INSTRUCTION (French) (TR416:CND/TR516:CND/TR716:CND)	
	3-865-332-31	MANUAL, INSTRUCTION (Spanish,Portuguese) (TR315:E/TR416PK/TR516PK)	
	3-865-332-41	MANUAL, INSTRUCTION (Chinese) (TR315:E/TR416PK/TR516PK)	
	3-865-332-51	MANUAL, INSTRUCTION (Korean) (TR315:E/TR416PK/TR516PK)	
	3-865-332-61	MANUAL, INSTRUCTION (English) (TR315:E/TR416PK/TR516PK)	
	3-865-333-11	MANUAL, INSTRUCTION (English) (TRV16:US,CND/TRV36/TRV43/TRV46:US,CND)	
	3-865-333-21	MANUAL, INSTRUCTION (French) (TRV16:CND/TRV36:CND/TRV43:CND/TRV46:CND)	
	3-865-333-31	MANUAL, INSTRUCTION (Spanish,Portuguese) (TRV16:E,HK,TW/TRV16PK/TRV36PK/TRV46:E,HK/TRV46PK)	
	3-865-333-41	MANUAL, INSTRUCTION (Chinese) (TRV16:E,HK,TW/TRV16PK/TRV36PK/TRV46:E,HK/TRV46PK)	
	3-865-333-51	MANUAL, INSTRUCTION (Korean) (TRV16:E,TW/TRV16PK/TRV36PK/TRV46:E,HK/TRV46PK)	
	3-865-333-61	MANUAL, INSTRUCTION (English) (TRV16:E,HK,TW/TRV16PK/TRV36PK/TRV46:E,HK/TRV46PK)	
	3-987-015-01	BELT (S), SHOULDER	
	3-988-960-01	BAG (8500), CARRYING (TR416PK/TR516PK/TRV16PK/TRV36PK/TRV46PK)	
	A-7093-731-A	NP-F330 BATTERY PACK (US,CND)	
	A-7093-732-A	NP-F330 BATTERY PACK (Except US,CND)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Take a copy CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use.

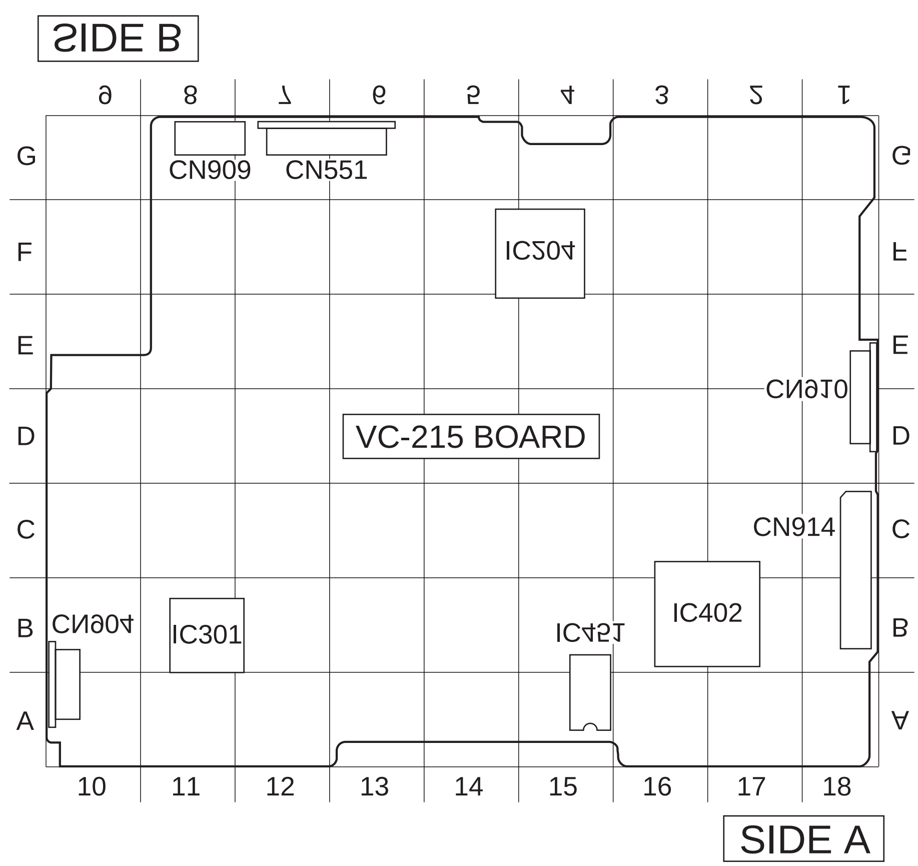
FOR CAMERA COLOR REPRODUCTION ADJUSTMENT



CCD-TR315/TR416/TR416PK/TR516/TR516PK/TR716
CCD-TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK

< PARTS REFERENCE SHEET >

You can find the parts position of mount locations applying to boards of a set.



CCD-TR315/TR416/TR416PK/TR516/TR516PK/TR716
CCD-TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK

CCD-TR315/TR416/TR416PK/TR516/TR516PK/TR716
CCD-TRV16/TRV16PK/TRV36/TRV36PK/TRV43/TRV46/TRV46PK

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